AMERICAN AGRICULTURIST

FOR THE

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"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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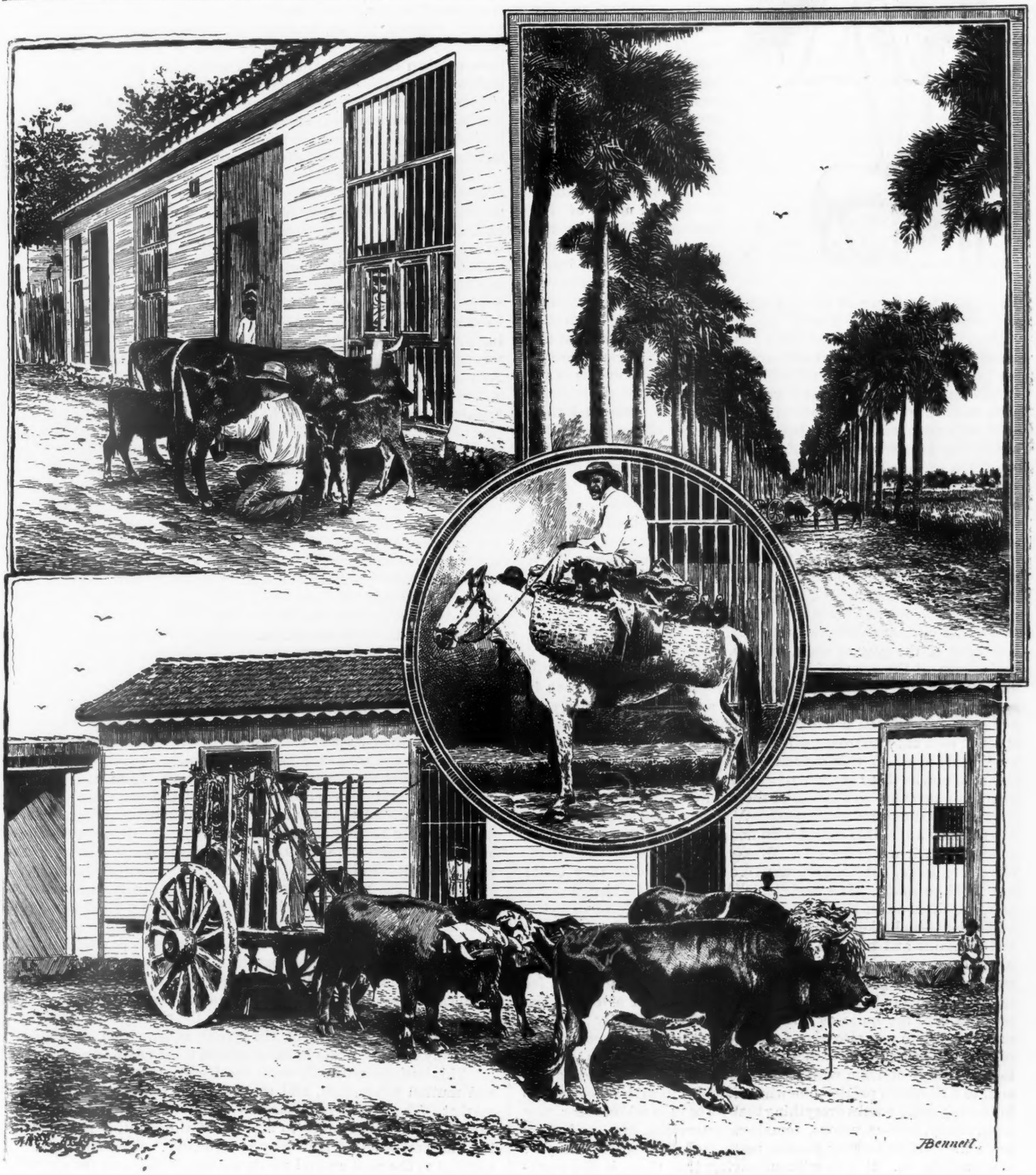

MARKET SCENES IN HAVANA, CUBA.

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IN HAVANA MARKETS.

JAMES KNAPP REEVE.

AMONG the most interesting sights of a unique and interesting city are the markets of Havana. A visit to them helps the stranger to a better understanding of the methods of life not only of the city people but of the country dwellers as well, and shows strikingly the curious mixture of races that goes to make up the population. There are three large markets, each one occupying a huge low stone building plastered on the outside, the manner in which, most of the buildings of Havana are constructed, and constituting a block by itself. Approaching the market during the busy hours of the morning we find the streets on every side almost blocked by heavily-ladened mules, just in from the country, carrying produce of every sort. The roads throughout the island are so bad that almost all heavy loads, except sugar cane and the huge casks of sugar and molasses, are carried in this way. Panniers made of very coarse bagging, or woven from straw, or of palm fiber, are fastened upon either side of the mule, and then filled with merchandise until the mule is almost hidden from sight. In this way almost every sort of fruit and vegetable is carried, also cocoanuts, corn-fodder, live chickens, live pigs, cans of milk and whatever else the country may send to supply the town. Corn-fodder is one of the principal articles of this commerce, as it is almost the only feed that is used for the horses and cows kept in the city. It grows all the year through, rarely attains a height of more than four feet, and is cut when the grain is hardening. Then it is tied in bundles and bound on mules until nothing but the nose and tail of the animal can be seen, and so brought in to market.

The hucksters and traffickers who come with the mules are as varied and curious as the wares they bring. There are Cubans and Spaniards of the poorest class, Indians, Coolies and *Ganjivos*—the native men of the mountains. They are a ragged, dirty, uncouth lot, shoeless and hatless, sometimes tramping along beside their loads, and again mounted upon the very apex of the crowded panniers. It may be seen at a glance, not only from their own poverty-stricken look but also from the leanness of their beasts, that they are wretchedly poor. A visit to their homes would still further emphasize this fact, as there are few poorer habitations known to civilized man than the palm-bark cabins of these Cuban small-farmers. But they are good-natured and apparently happy. On arriving at the market they are noisily busy for an hour unloading their mules and arranging their wares for sale. Oranges are poured from the panniers into large, flat baskets, until one wonders that they could have held so many. The baskets, holding perhaps a bushel and a half, are lifted upon the head—the favorite way here of carrying all burdens—and taken into the market. Then there are pineapples and plantains and bananas, as plentiful as apples or potatoes with us at home; these are all ridiculously cheap, a dozen fine oranges for a dime, a good pineapple for five cents, or the very best for ten, and as many bananas as you care to carry for a dime. The potatoes here are quite as fine as one would see in any Northern market. There are also those other tropical fruits, sapotas, sapodillas, and some whose names I could not easily ascertain, curious looking, many of them with rough brown coats, all of them sweet and, to a Northern palate, somewhat insipid. In midwinter there is in the vegetable booths everything that we have in midsummer, new corn, celery, lettuce, onions, tomatoes, artichokes, etc., and there are some curious-looking messes, ready-cooked, of which the odor is enough for us. It goes without saying that there is dirt everywhere, for these people are not at all cleanly, when judged from the American standpoint.

The interior of the market is given up mainly to the sale of things eatable. The outer portions, fronting upon the streets, are filled with booths of various sorts where one may buy a thousand things of little value, and hardly anything of real worth. One may buy poor candies, flowers made into gaudy bouquets, imitation jewelry, cheap toys, brilliantly-colored pictures and books with strikingly-illustrated covers, decalcomania supplies—this seems to be a favorite decorative art—cheap little wooden statuettes of the saints, in fact anything and everything that is calculated to catch the eye and the money of the ignorant and unwary. There is much noise and chattering wherever two or more are gathered together, or where even the smallest commercial transaction is being conducted. The people, though most of them are dressed in rags, show some bit of color that helps to enliven the scene. Negroes, coolies, and natives affiliate with the best comradeship; that the negroes are as good as any is shown by a brown Cuban lad who is blacking the big and ragged shoes of a stalwart black who lies outstretched upon the steps of the market. Old crones, perfect witches in form and feature, hobble about selling herbs, charms and lottery tickets. Chinamen sit stolidly behind counters whereon are shown delicately-carved bits of ivory and finely-worked boxes of scented woods.

The milk-dealer is about the only merchant of any sort who cannot be found in the market. But he is just now going along the street outside, driving his herd before him and stopping at each door to draw, direct from the cow, such a supply as may be wanted. Most of the milk used in the city is procured in this way, and at almost any hour a herdsman may be seen in the street driving a half-dozen cows or asses before him from house to house. Some milk comes into the city in small cans, on mule back, as I have met them on country roads and have seen the milkmen washing their cans in tubs of dirty water in the streets of Havana; but where it is sold I never could discover. Visiting these markets in February, and seeing the profusion and cheapness of certain fruits and vegetables, especially oranges, pineapples, onions, potatoes and tomatoes, one wonders that there is not a larger trade in these products between the island and the United States. There is some business done, of course, but nothing to what there might be. The Cuban orange is almost invariably of good size and is very sweet. The pineapples are large and delicious, and can be had in great quantities in the winter, when they are scarce and high with us. The onions and potatoes equal the product of the Bermudas; and the tomatoes are of better size and richer color than any that we receive from Florida in the winter. The gardeners and fruit-growers here are never troubled by frost, and both climate and soil conspire to give bountiful harvests. With the infusion of a little American energy and business methods the cultivation of these products for the markets of the United States might be made a very remunerative industry. [A few interesting market scenes in Havana are presented in our frontispiece.]

SHEEP FARMING IN AMERICA.

The enormous area of the United States, which may roughly be compared to a square of 2,500 miles in each direction, and which covers a corresponding variation in climate, from temperate to torrid, and arid to wet, and the essential dependence of sheep upon their special environments, together render the question of sheep farming in this country—as asked by one of our subscribers in New Zealand—more intricate than in any other country in the world. At the same time it gives a wide scope for the enterprise and skill of the shepherd, for there is not a single department of his industry which may not be carried on here with greater profit than anywhere else in the world. The great home market for every kind of wool, for mutton, and for lambs, is practically at the shepherd's front gate, for his products, of whatever kind they may be, are saleable there. But no other kind of live stock requires more careful selection for the locality and purpose of the flock than sheep do. The right animal must be in the right place. Then with ordinary good management the profit is sure and satisfactory, while any mistake made in the selection must be disastrous.

This business naturally separates itself into wool growing, wool and mutton production, and that of wool, mutton and lambs for market. The first may be carried on anywhere, for wool may be carried hundreds of miles to a point of shipment, if need be, and the cheapest kind of land may be available. It is, therefore, best adapted to the western and north-western plains, and the extensive forests of the South, where pasturage may be found the whole year, except for short, occasional periods, when a small supply of hay or corn fodder is required to tide over any unusual exigency. The sheep for this purpose is the grade merino, a cross of the native which is descended from the progeny of the first importations made

by the Spanish settlers, and which, although it has been greatly improved of late, is still susceptible of an increased value so as to supply the markets for cheap mutton. No other sheep has been found profitable for this special use.

Passing over the plains to the great central agricultural region of the United States we reach the home of the wool and mutton sheep. These include every known variety. The improved native is the most numerous, and is the basis of thousands of grade flocks of Merino, French, or Delaine Merino, Southdown, Shropshire, Hampshire, Oxford, Cotswold, Leicester, and, of late, the Horned Dorset, which, under skillful management, has taken the lead in the rearing of early lambs for the special supply of the large cities, where forty or fifty cents a pound is readily paid by wealthy persons for this unseasonable delicacy. And it is in this rich part of the United States that the bulk of the wool is produced for the various clothing goods. The present values of wools are as follows: Territory, or range wools, from fifteen to twenty-two cents per pound; carpet wools, the coarsest part of these, thirteen to fourteen cents; Merino wools, washed on the sheep's back, twenty-five to thirty-three cents; combing, coarse, twenty-seven to twenty-nine cents; fine merino, thirty-three to thirty-seven cents; Southern native sheep, twenty-four to twenty-six cents. The average weight of the fleeces is not far from five to seven pounds; the range being three to nine pounds of washed wool.

The most profitable business is the rearing of lambs for market. This is done in two ways, keeping a high-grade flock permanently and selling the male lambs only; or purchasing common sheep in the markets in the summer and crossing them with a pure bred Shropshire or Dorset ram, selling the lambs when three months old, and fatting the ewes for sale in the summer. Ewes for this purpose may be bought with three or four months' wool, in July or August, for five cents a pound, live weight. For this business there are many excellent farms to be bought in the New England States, Pennsylvania, Virginia or North Carolina, for five dollars an acre, and all within from eight to twenty hours' journey of the large markets for lambs and mutton. This business gives all the three products, wool, mutton and lambs, and with fairly good management, returns 100 per cent. on the money invested. The crops grown for winter feeding are clover hay, peas and oats mixed, corn for grain and fodder, turnips or mangels, and, for feeding on the ground in summer, rape or white mustard, or tares and barley mixed.

Parts of the Southern States, but chiefly the mountain region, which includes portions of Virginia, North Carolina, South Carolina, Georgia, and Tennessee, almost wholly covered with forests, have many advantages for sheep rearing for wool and mutton. Land may be bought from $1.50 to $5 an acre, and will produce all the necessary crops, while the sheep run in the woods in the summer, and thus save all the crops for the short winter feeding. The favorite sheep for this region is the Shropshire, which, crossed on the native sheep of the locality, is quite as valuable for market as the pure bred. The foot of the mountains being warmer than the high lands, is better adapted for the Merino. The experience of practical shepherds in this region has shown that a sheep can be fed through the year for twenty-five cents, and for this the shepherd will have wool worth a dollar, and a lamb. The mild winters of this Southern region are very favorable for the sheep, which, in three years out of five, will require no hand feeding, a second-growth clover pasture being sufficient with a small quantity of grain, such as oats, to improve the mutton and wool.

NORTHWESTERN GRASSES.

RICHARD WAUGH, MANITOBA.

The prairies of the Northwest are covered with at least 150 kinds of grasses. The relative importance of these is gradually being changed. Along the lines of railroads running out to the West and Northwest from the two great twin cities of Minnesota, may be seen, in the early months of summer, long lines of fresh and vigorous blue grass, loaded with seed, which, in a few years, will spread over the prairies, on both sides of the track, and gradually crowd out the native wild grasses. That blue grass represents the seeds from the baled Minnesota hay on which outgoing stock is fed in transit. Shaken out of the bales, or passing undigested through the animals fed on it, the seed falls out of the edges of these cars, and, in due time, a long line of blue grass, mixed with white clover, grows up a couple of feet outside the track. Long before there were any railroads I used to find, along the trails, frequented by fur traders and surveyors, varieties of grasses and other plants, carried sometimes long distances in the same way. Over the great lake basin, which now constitutes the fertile Red River Valley, water has done much work as a carrying agent, and everywhere birds and wild animals have done their own share of the work necessary to spread freely all the varieties of seeds, some of which perished from uncongenial environment, while others flourished.

It is well known to farmers that many cultivated grasses are unsuccessful in the Northwest. Timothy does fairly well in deep, rich clay, but elsewhere it makes a poor show, and the clovers take very slim hold west and north of the divide between the Mississippi and Red River basins. Many kinds of wild grasses would repay more careful cultivation. The seeds of the taller species have always supplied a good share of the winter feed of both birds and animals, but much of the stalks was worthless as food. Some sorts, bearing very little seed, cure naturally, and in winter are fairly nutritious. But it was soon found, by careful investigators, that the heavily-seeding grasses, when cut green, made excellent hay, and both on the Canadian Experiment Farms and by private parties it has been proved that profitable crops of hay can be grown from cultivated native grasses. Of these, Drop Seed (*Muhlenbergia glomerata*) has, perhaps, given most satisfactory results, and the seed, when ripened, can be easily saved. A native rye grass (*Agropyrum violaceum*) and Fowl Meadow grass (*Poa serotina*) become readily available. In many districts, only partially suited to wheat cultivation, there is an abundance—in some cases a superabundance—of the native grasses and herbage. In favorable seasons prairie fires are a frequent source of terror and ruin to the earlier settlers, but after these fires have swept a country once or twice, or the hay meadows have been mown a few times, the excessive luxuriance of the herbage is gradually lessened, and hay land becomes almost as valuable as grain soil. Cattle flourish all the year round on the wild herbage, green or cured. This herbage becomes more nutritious to the West. On the Milk river in Montana, and on the Saskatchewan and its tributaries, in Canada, cattle fatten earlier and better than in the best parts of the Red River Valley. The climate and the soil each contribute a share to this result. Until the land is wanted for grain cultivation, the Northwest of the United States, and the great stretch of Western Canada to the north of it will furnish cheap feed for innumerable cattle, horses, and sheep.

LATE CULTIVATION OF CORN.

HENRY STEWART.

In the year 1876 I began the practice of the continuous fertilizing of the corn crop with frequent cultivation. In that year I produced twenty-five bushels and eight pounds of shelled corn on one-fifth of an acre, a plat in my garden eight rods long by four wide. The next year I cultivated four acres in one of my fields; two acres were planted with seed from the crop above mentioned, which was of a kind known in the South as the many-eared corn, and the other two acres with the common white field variety. The yields were only a few pounds less than 200 bushels of grain on the former two acres, and 198 bushels on the latter two; the corn was husked by the bushel, and measured by the husker and myself. Since then I have grown not less than eighty bushels of shelled grain to the acre, with this same method of cultivating once a week, and fertilizing four times during the growth of the crop.

My reasoning has been like this. Corn is a rapidly-growing plant, and a greedy feeder. It needs a quick start, and there are times during its growth when it needs some easily assimilated food to meet exigencies in its condition which call for increased nutrition. These times are when the first-applied fertilizer is exhausted, and the plant is making rapid growth. This is when it is about three feet tall. The next time is when the tassel is first appearing, the first approach of what might be called a state of puberty and development of the reproductive organs. The next is when the silk appears and the fertilization of the flowers is at hand. This is the most exacting period of the growth of the plant, and partial failure at this period is almost universal, as seen in the vacancies in the ears, where the grains have aborted. The fourth period is when the grain is filling, and the few ears that are found to be completely filled out to the end, may be taken as an indication that the plant has been unable to complete this growth for want of the requisite nutriment. This has been my conclusion, because of the common occurrence of these failures to which the small yield is due, and the absence of any such failure in the crops grown under this system of feeding.

We cannot ignore the analogy that exists between plants and animals. We feed the lambs and the calves and colts through their dams, and take care that the dam, while carrying the young creature,

and the male when in service, shall be liberally fed. And this is done through consideration for the progeny. Why should this not be applicable to plants, whose physiological necessities are based on precisely the same principles as those of animals? These conclusions have been verified by the constant increase of the yield under this continuous culture. My method has been to prepare the land in the best manner, and to fertilize liberally, using 500 or 600 pounds per acre of complete manure, and fifty pounds applied at each of the periods mentioned. The plant food in the fertilizer is quite soluble, and of course immediately available, and I have noticed more than once—when the fertilizer has been applied in the afternoon, and a shower has fallen during the night—within twenty-four hours the effect of the fertilizer on the plants in the darker green, and the rapid growth for days afterward. Where this plan has not been followed, the corn has stood two feet lower than in the fertilized part of the field, although at the first each part has had an equal allowance.

The seed, being planted by machine, a roller mark is left to show the rows, and the cultivator may be used before the plants are seen above ground. Two weeks may be gained in the growth of the crop by this early cultivation. Every week the cultivation is repeated, weeds or no weeds; indeed, I have learned long since, that to kill weeds is only a side issue in cultivating crops. The stirring of the ground of course prevents weeds, but the culture of the soil should never be dependent on the presence of weeds in the crops. When the time comes to apply the fertilizer it is sown along the rows, and the cultivator follows. By leaving a broad headland at each side of the field the horse can turn when the corn is six or more feet in height. The cultivator I have used is a V-shaped sloping-toothed harrow, which I find the best for the purpose, as it breaks none of the feeding roots that lie so close to the surface.

Sometimes I have sown rye in the corn and covered the seed at the last working, that is, when the silks have faded, showing that the fertilization is completed, and the grains are forming. The rye makes an excellent feeding crop in the spring, or grass and clover may be sown the following spring.

DAIRY CLUBS AND THEIR BENEFITS.

G. JOHNS.

The profession, or industry, that does not make a daily study of its principles, compare notes and experiences, and devise ways and means to meet, on an economical basis, the exactions of supply and demand, lacks business sagacity. Dairying is no exception. It is sometimes said that too many dairymen are neither students or investigators of their own business, especially in analytical inquiry; this is the class which is asserting that the dairy does not pay. The dairy schools and State associations are doing much valuable work, yet, so far, it seems as if they were useful only to the few progressive dairymen who need little help, so close are they in their own individual study and practice to the most advanced dairying.

It would seem that, for the purpose of dairy instruction and in arousing those yet without the gate to better things, something like a town or neighborhood dairy club might be instituted, which would carry lessons and encouragement to the very doors of those who most need it. The town dairy club would bring the dairymen together to learn and be "learned of." The average dairyman has many ideas, some, no doubt, of great value; but these ideas need to be pooled and sorted out, the good made available by the larger number, so that all can share alike at this ever-flowing fountain of information. Each member would be inspired to greater effort.

This club need not have a long constitution and by-laws, much less a formidable array of officers. A chairman for a year or two would be sufficient. The object would be to exchange ideas, relate experiences, find out what practice had led to the best results, and what should be avoided. Let foods and rations, crops and fertility be talked over, also the cows and the herds. Let the club provide itself with a good Babcock milk tester, have some bright girl or boy become an adept in its use, and let the individual testing of cows and the collective milk of herds be put to the test, and their value shown. The club could, with small expense to itself, buy, now and then, an article of mechanism, and test it to see if its general adoption would be a paying matter. The club should buy, in a general market, such dairy apparatus as is needed. Then would follow the offering of the butter, etc., of the members of the club to one general buyer, and this would establish a market that each for himself could not approach, and let the spirit of coöperation become prominent. For improvement the club should have its circulating library of dairy literature—books, papers, and journals appertaining to the dairy, not merely one copy of each, but a generous supply, that all may become dairy students. Now and then, not too often, let the club invite in a noted breeder of dairy cows, to discuss breeds and breeding; then an expert butter or cheese maker, and, once a year, get a great authority to make an address on general dairy information. This course would soon arouse the spirit of inquiry and improvement: and the outcome would be, in that locality, to put the dairy to the fore as an industry that makes a grand return for active brains.

GRADING HONEY.

W. Z. HUTCHINSON, MICHIGAN.

Although most farm products are graded there have never been any general rules for the grading of honey. Naturally dark honey is seldom mixed with white honey, because, if this were done the whole lot would bring only the price at which the dark would sell, and for the same reason unfinished sections are seldom crated with the finished combs. In reporting the market prices, dealers usually make use of the terms; "fancy," "choice," "No. 1," and "No. 2;" but there is much confusion in regard to the exact meaning of these terms. A producer may think that his honey is choice, or No. 1, but when it reaches the dealer, the latter finds it far from what the producer called it, and from this condition arise disputes and unpleasantness.

Last fall, when the Northwestern Bee Keepers' Society met at Chicago, there was an attempt to formulate a set of rules that might be used in grading honey, and, at the meeting of the North American Bee Keepers' Society at Albany, N. Y., an improvement upon the Chicago rules was suggested. Since then the matter has been thoroughly discussed by bee keepers, yet there are so many points to be considered that an agreement is difficult. Possibly none will be arrived at until some set of rules has been given a trial, that actual practice may point out more clearly what is needed. After attending both of the conventions mentioned and reading all of the discussions on the subject I am inclined to give preference to a formula reading about as follows:

"Fancy."—All sections to be well-filled; combs straight, of even thickness, and firmly attached to all four sides; both wood and comb to be unsoiled by travel-stain or otherwise, all the cells sealed, and the honey of uniform color.

"No. 1."—All sections well-filled, but with combs uneven and crooked, detached at the bottom, or with but few cells unsealed; both wood and combs unsoiled by travel-stain or otherwise, and the honey of uniform color.

"No. 2."—Sections with wood or comb, or both, travel-stained or otherwise much soiled, and such as are less than three-fourths filled with honey, whether sealed or unsealed; and the combs containing two or more colors.

"No. 3."—All crates filled with honey not described in any of the foregoing grades.

The color of honey to be known as "light," "amber" and "dark." The crates to be unsoiled, but if otherwise, the honey in such crates to be classed in the next grade below the one indicated in the instructions. In describing honey we would then have "fancy white," "fancy amber," "fancy dark;" and "No. 1 white," "No. 1 amber," "No. 1 dark;" and "No. 2 white," "No. 2 amber," and "No. 2 dark." Upon this point of color there has been a great deal of contention, some asserting that only white honey could be called "Fancy"or "No. 1." There are many people, however, that regard buckwheat honey as the best honey; to them there would be fancy buckwheat or dark honey. Tastes differ in this respect, and the plan of calling only white honey first-class will not be feasible. When it is possible to give the source from which honey is gathered, that might answer instead of giving the color, if all people were as well informed as bee-keepers in regard to this matter; but, as it is, it is probably best to use the words "white," "amber" and "dark." Uniform grades and terms will improve the price.

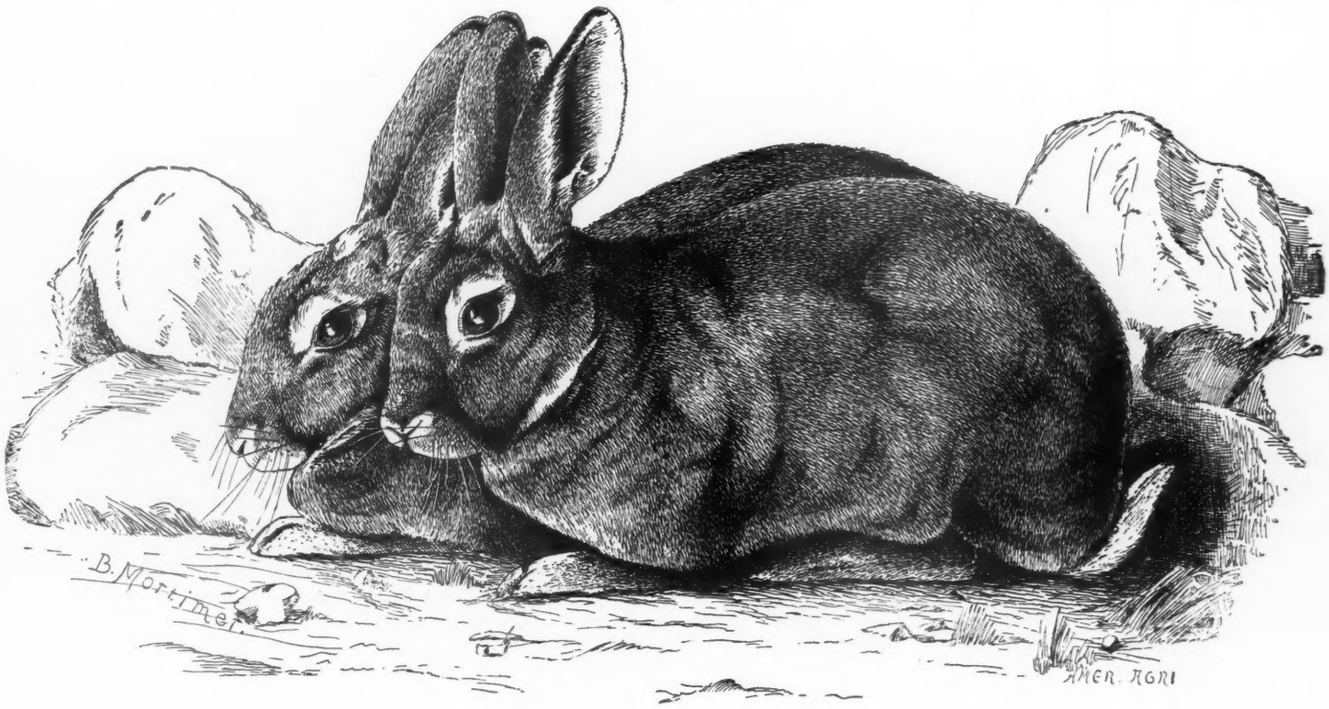
Milking in Fly Time.—The switching of the cow's tail, so troublesome to the milker, but relieving to the cow, may be prevented by the use of a milking sheet, made to cover the cow all over. It is drawn together under the cow by small hooks, and, by applying to the legs an infusion of tansy, the cow may be milked in peace. This plant is never touched by any insect, and rubbing a horse with a handful of it will deliver him from the flies which torment him on the road. An infusion of it is also distasteful to such vegetable parasites as the cabbage worm, and other caterpillars.

ASS BREEDING IN AMERICA.

JOHN M. STAHL, ILLINOIS.

In this country the ass has been little employed except in the breeding of mules. Here the horse does so well that the mule is not nearly so often used as economy would demand. Washington was the first successful breeder of mules in the United States, using his best coach mares for the purpose. In 1787 the King of Spain presented him with a jack from the royal stud. But a jack presented to Washington by LaFayette got better mules.

At present the ass can be recommended only for mule breeding. The great mule-breeding regions are in Kentucky, Illinois, and Missouri. There the rearing of good asses is highly profitable, a good jack selling readily for a thousand dollars. The rearing of jacks in other localities, not too far north, would doubtless be profitable, as they could be shipped to the mule-raising districts and sold at a profit. A good mule on the farm will soon dispel the prejudice against his kind; and as soon as this prejudice is dispelled, mule raising will become popular and profitable. In favor of the progeny of a mare put to a jack it may safely be said, that it is less liable to disease than is the horse, and is tougher in hoof, hide, and constitution; that it will average at least one and one-half the working years of the horse; that the cost of its keeping, when mature, is not more than two-thirds the cost of the keep of a horse; that to slow, steady work it is better adapted than is the horse; and that, when not soured by senseless abuse, as too often it is, it is more patient and docile, and rarely less intelligent than the horse. A mule's hoof is fitted for rocky ground.



A PAIR OF BELGIAN HARES.

BELGIAN HARES.

The so-called Belgian hare is a hare only in name. It has a general resemblance to the common wild hare of Europe, with the enormous fecundity and other characteristics of the rabbit. Possessing so many apparent peculiarities of both, it was at one time thought by some to be a "leporine" or hybrid between the rabbit and the hare. But authorities in mammology have decided that it is, beyond question, a true rabbit.

The Belgian hare is gray, and in general aspect and movements resembles the common wild hare. Full-grown specimens in good condition weigh from eight to twelve pounds each. The flesh has a gamy flavor, somewhat unlike that of hares or any other rabbit, the does and gelded males being very fine and palatable. The food of these animals consists of herbage, clover and other succulent vegetable growth, and in captivity, turnips, apples, and other tender, juicy food is readily devoured. The females are immensely prolific, bringing forth litters of six to eight young from six to nine times a year. The young does begin breeding when six months old.

Some efforts have been made, by interested parties, to introduce these animals into this country, with a view of breeding them for the table. But such a scheme, plausible as it may look at first, is more than questionable. If a doe breeds six times a year, producing an average of eight at a birth, and one-half of all are females, the total product of a single pair would be more than 10,000 at the end of two years. It is quite clear that a single pair escaping from captivity and finding refuge on a mountain in the depths of a swamp, or other remote and inaccessible place, would soon send out devouring hosts, more destructive than swarms of locusts. This is not mere theory, as calamitous experience in Australia has proved. A few common rabbits, far less prolific and destructive than the Belgian, were brought from Europe, and in a few years the entire country was overrun by their direct progeny. Millions of acres of sheep pasture were denuded of herbage. Active warfare was opened upon them, and heavy rewards offered for methods of extermination. Every means that science and skill can suggest has been employed, but with only partial success, and it costs over $2,500,000 a year to merely hold the "rabbit pest" in check. The mongoose on the Hawaiian islands, and the English sparrow brought to this country, have taught similar, though less costly, lessons.

The breeding of these Belgian hares for the game markets, in this country involves such serious risks that it cannot be recommended. In the densely populated regions of Western Europe, where meat is scarce and mouths are many, they may be a valuable addition to the food supplies, but in this land of cheap meats and great areas of unoccupied land, they are not wanted. The most profitable domestic animals are those which can be more completely under man's control. Rabbits and hares cannot easily be kept on the owner's land, and hence must live in a semi-wild state.

To Keep Milk Sweet in Hot Weather.—The milk dairyman is often at his wits' end to prevent souring of the milk in the hot season when the moisture in the air causes the heat to become more than usually intolerable. To keep the milk sweet then, every precaution must be taken. It is not a serious adulteration to add a small quantity of carbonate of soda, or potash, to the milk, to neutralize the slightly acid change produced in the milk by the heat and bacteria, and the small quantity required has no appreciable effect on the milk. The carbonate of soda in the milk is changed into lactate, and the carbonic acid is given off, while the lactic acid is neutralized, and the milk is kept from souring. Dissolving an ounce of the soda in some of the milk and then mixing the solution through a forty-gallon canful, may save the whole from loss during times of excessive heat.

FANTASTIC TREE GROWTHS.

S. PENTER.

The old adage, "As the twig is bent, the tree is inclined," has more truth in it than most of the old sayings. The growth of trees and plants, especially if they are of striking form or color, interests all country residents. Various forms of peculiar tree growth are clearly shown in the illustrations. Some kinds of young trees may be shaped into almost any form desired. This work is best done in the nursery rows, where there is plenty of material to select

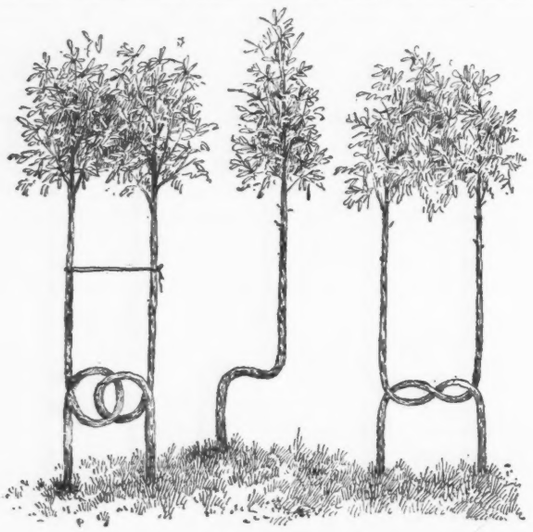


FIG. 1. FIG. 2. FIG. 3.

from; yet on many farms, there is a hedge row in which plum, cherry, and other sprouts, grow unmolested, furnishing good subjects for experiment if a few curiosities are desired.

To produce the form shown in Fig. 1, select two young shoots, bending them as in the engraving, and tying their tops together so that the stems are parallel. That in Fig. 2 can be produced by bending the stem over a frame, or by driving stakes and tying in the shape desired. This knee, or bench shape, should be placed within a foot of the ground, and is adapted for an apple tree planted near

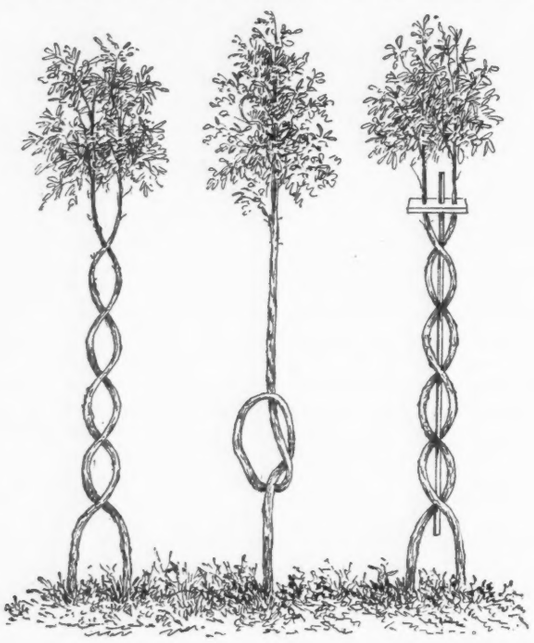


FIG. 4. FIG. 5. FIG. 6.

the house so that the horizontal portion may serve for an out-door seat. For Fig. 3, select two last season's sprouts, growing about two feet apart, tie them in a knot as indicated, bend the tops upward, tying them together so that they will assume an upright position, and after one season's growth, these and the other forms will retain their position without tying. To produce the form in Fig. 4, the sprouts should grow within eight inches of each other, and are simply twisted together. Stakes should be driven at each side, and the tops tied together to prevent untwisting. That in Fig. 5 is quickly made, but care must be taken not to make the loop too small. In Fig. 6, an iron rod, or tough round wooden stick, three-quarters of an inch in diameter, is placed upright, and the sprouts are twisted about it. At the top a strip of board with three holes in it is placed at the point shown in the illustration. Other forms of growth can be obtained, but the foregoing are the simplest, and are easily produced. If tied low, the form in Fig. 3 will give an excellent rest, and is one of the most desirable shapes shown, for if one of the trees should die, the one remaining will still serve its purpose and furnish a good seat.

A PORTABLE HAY SHED.

Wind and rain make it necessary to weight or fasten down the tops of hay stacks. A convenient portable roof is shown in the illustrations engraved after sketches from John C. Umsted. The ridge pole *a* in Fig. 1 is a two by four inch timber, fourteen feet long. To keep this in position, pairs of legs *b* made of one by six-inch boards, twenty inches long, are nailed on, and braced by a two by four inch piece *d*, six inches long. The sections of roof, Fig. 2, are three by eight feet, made of three widths of one by twelve-inch barn siding, nailed on two one by eight inch crosspieces, one of which is two feet nine inches long, the other three feet three inches. To keep the sections in position the length of the cross-pieces, alternate above and below as shown in the illustration. Use three-inch wire nails close to edge of boards, and clinch. On the upper side, the cracks are battened with lath, the ends of the lath being shaved with a drawing knife to overlap as in shingling. On each side of the lath, cut with a guttering plane, a water channel one-half inch wide and deep. If the joint between the sections is guttered on each side, it does not need lath. The sections for one side are hung on the spikes *e* by wire loops eight inches long. On

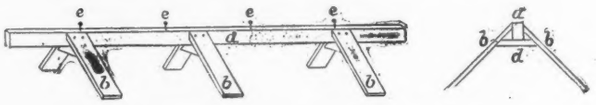


FIG. 1. FRAME OF PORTABLE STACK ROOF.

the other side the loops are twelve inches long, to lap over at the ridge. Two men can put this cover on a rick of hay in a much shorter time than they can arrange and fasten the poles needed to keep the hay from blowing off. The cost will be saved in the hay protected from rain. For very heavy wind the sections can be weighted, though when settled into the stack, this is not often needed. In drawing in the hayrick for this roofing, the middle should be kept solid, the ends carried up straight, and the sides made somewhat concave, so that the eaves will not catch and carry water into the stack. With this roof, hay or fodder can be stacked anywhere on the farm, an unfinished rick protected from a sudden rain, or a load or two of hay or fodder sheltered.

Locating the Barn Buildings.—When locating the barn buildings, there should be a good and sufficient reason why the barn is placed there, the sheds here, and the corn-house and pigpen yonder. If possible, the location should be such as to be easily reached from the house, but distant at least a hundred feet, as required by most insurance companies. The odors from the stables are a cause for an increase, instead of a shortening, of that distance. A natural elevation should be selected, if possible. The site should be dry, or made dry by filling in with earth. If well water must be used, it is best to ascertain if you can obtain a supply of water at a reasonable depth before putting up the buildings. The buildings should be so arranged that stock may be protected from the prevailing winds of winter, placing the sheds on the north side of the yard, and if the remainder is inclosed with a tight board fence, six or seven feet in height, it will answer as a good protection. Make the barnyard as small as you conveniently can. Place the barn over a basement, even if located upon nearly level ground; it will prove a very convenient and valuable

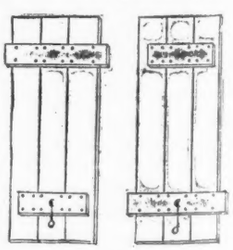


FIG. 2. SECTIONS OF ROOF.

portion of the building. Often the slope of the land, or other reasons, causes the barn buildings to be located upon the opposite side of the road from the dwelling house. This is usually not so convenient as when all are located on the same side.

RUSTIC FENCES.

JOHN DE WOLF, SUPERINTENDENT PROSPECT PARK, BROOKLYN, N. Y.

Rustic fences, when well built, are most attractive, and there is no reason why they should not be strong enough for every purpose. They are unobtrusive and harmonious in rural scenes. The

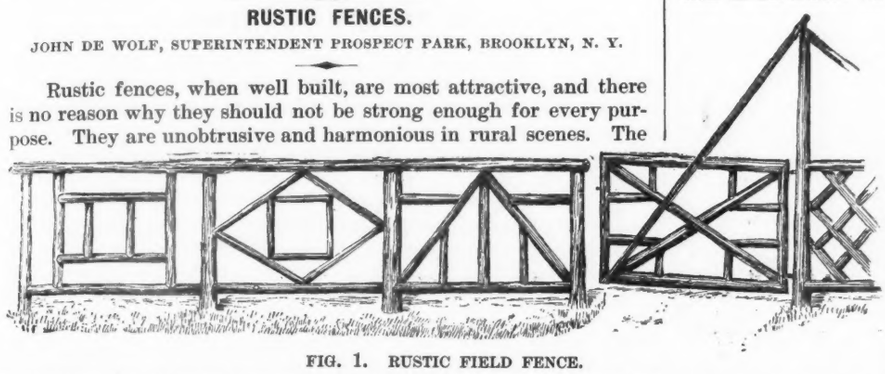


FIG. 1. RUSTIC FIELD FENCE.

main lines should be of long, substantial pieces that will brace and strengthen the whole, and the details carried out with shorter pieces. When the pattern is varied in different panels, it uses up the material to advantage, and is more generally liked than a repetition of the same design. The distance between posts, as a rule, had better be kept the same. Sometimes when they are light, placing them in pairs gives strength and variety. Common juniper, or red cedar, is good for fencing, being strong, light, durable and easily worked. The strength of rustic work is usually that of the nails that fasten it. The best are wire or galvanized box nails, and clinched where it can be done; drive carefully to prevent splitting. Green wood is often preferred, as less liable to split, and it bends into shape, and seasons afterwards. Fig. 1 shows a pattern that has proved useful around a cattle pasture. It has a strong top rail and no openings that cattle are likely to catch their heads in. Fig. 2, without the top rail, is more unique, and greatly liked. It is between a garden and a sheep pasture. Vines run over the upper part, but are usually eaten away if low enough to reach the sheep. Fig. 3 shows additional panels in the same fence, and suggestions for screens. The tall pole used as a post is now covered with a hop vine. Screens are more often in demand on new and bare places than on those shaded and sheltered

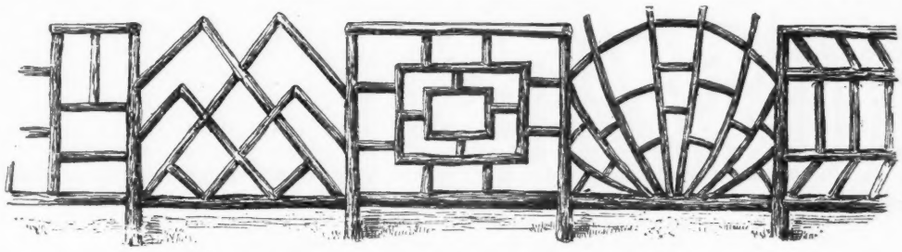


FIG. 2. FENCE WITHOUT TOP RAIL.

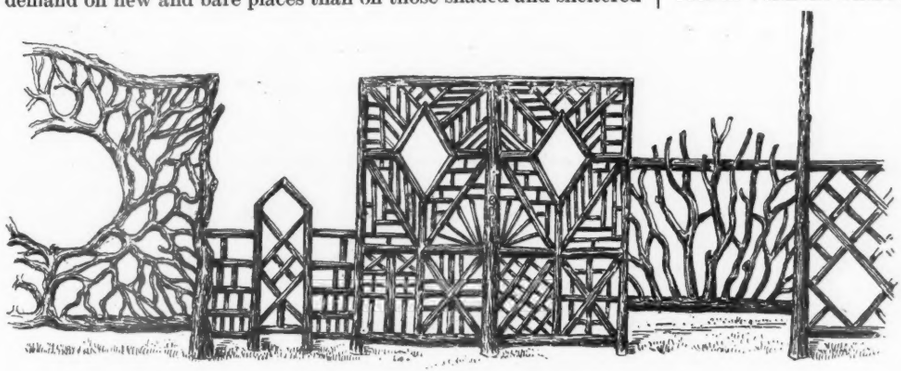


FIG. 3. FENCE WITH SCREEN PANELS.

by trees and shrubbery; they can be made in close patterns, if great seclusion is desired. Those of straight pieces are easiest to construct, but when crooked branches are carefully matched and fitted, the result is finer. Fig. 4 is a stile turning on an iron pin in the top of the center post, although one of locust, or other hard wood, would do as well. Braces formed of crooked pieces surround the post and turn on it below. Fig. 5 is a sign board hung from a branch of a tree. Nailing directly to a tree is a bad practice. Where no convenient branch extends, a post, or, still better, two of them supporting a sign, framed in bark-covered wood, is readily seen, without being ugly and obtrusive. Hard woods, locust, oak, walnut, red cedar, old apple and pear trees, cut when the wood is not growing, make the best material, as the bark clings better then. Cut the pieces longer than needed that the ends may be trimmed.

A DURABLE ROOF.

W. E. PARTRIDGE.

There is a form of combination roof which is well worth attention in all States where slate is cheap. It is of slate and asphalt combined. The roof is tightly boarded in the usual manner so as to have as good a foundation as possible. The asphalt, coal tar, Trinidad pitch, or other compound of the class, is then heated, and Portland cement mixed with it until, when dropped upon a piece of slate and cooled, it will stick without chipping, and at the same time be stiff enough not to run at the heat of 200 degrees. A strip on the roof a little wider than a slate is then covered with the prepared tar or asphalt, and a course of slate is laid and bedded while the stuff is hot. Each is laid with its full face to the weather, and the edges separated all round by about one-quarter of an inch. The sharp-edged side is laid down; that is, the side which was up when the slate was trimmed goes down. Then another space is coated and another course laid, the courses being separated by the same space as the slates.

When the roof has in this way been covered with slate, all the joints are "payed" with the mixture. That is, they are filled up a little more than full with the hot compound. In this way the great body of the roof is protected by slate. The asphalt holds the slates in place, and, at the same time, is so little exposed to the weather that the atmosphere can have very little effect upon it. Moisture cannot get under the slates, and as they are laid with their full face to the weather, a much smaller quantity than usual is needed to cover the roof. If repairs are ever necessary, they can be easily made without injury to other portions. I have seen this roof in Vermont where it has extreme changes of temperature, and it stood well. There it was applied upon rather flat pitches, not sharper than those for tin. Probably any of the asphalt or roofing companies could furnish a material already mixed which would exactly answer the purpose. The roof mentioned was laid by a man who was not an asphalt roofer, and he used ground slate with which to thicken the tar, but he considered Portland cement much better for the purpose. The roof, thus laid, avoids many of the troubles inherent in slate as usually laid. There being no lap, there are no cracks into which snow and water can penetrate, consequently the slates are not broken by freezing. Repairs are very easy. If a slate is broken by violence, it is easily taken up, and, by applying the prepared tar, or asphalt, hot, repairs can be made, which will leave the roof quite as good as when new. Such a roof is practically fireproof, and adds much to the appearance of the building. Slate is very durable and need not be painted every year.

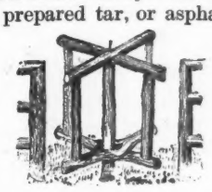


FIG. 4. RUSTIC STILE.

FIG. 5. RUSTIC SIGN BOARD.

HOW TO FILL THE SILO.

JOHN GOULD, OHIO.

When to cut the corn is now pretty generally determined. The Stations east and west have made most painstaking investigations, and have agreed that when the corn is in the glazing stage, it is in its best condition for the silo. Professor Roberts, of Cornell, found that between the development of the tassel and the glazing of the ear, the gain in feeding value was nearly two hundred per cent. The weight of the cornstalks and ears per acre, and the pounds of the different food elements in the crop, showed the following increase from August 2nd to September 24th, according to careful analysis of many samples:

	August 2.	*September* 24.
Weight of crop per acre	24,000 pounds.	30,000 pounds
Dry matter in crop per acre	3,600 "	9,700 "
Crude protein (nitrogenous matter albuminoids)	361 "	686 "
Non-nitrogenous matter(sugar, starch, etc.)	2,100 "	5,598 "
Fiber (woody matter)	800 "	2,200 "
Fats and oily matter	98 "	224 "
Feeding value of crop per acre	$37.72	$95.24

This table seems confirmed by the results of a half dozen other Stations, and confirms in results what the farmers knew before. The feeding value is obtained by estimating the protein at 1.6 cents per pound, the non-nitrogenous matter (sugar and starch) at 0.96 cents per pound, and the fat at 4.2 cents. This is what these elements cost in ordinary concentrated feeds at average prices according to the Connecticut Experiment Station.

The methods of cutting the corn in the field when it has reached the right stage are undergoing improvement. The corn-knife in the hands of an active man is yet the chief implement relied upon to cut the corn and lay in gavels in the field. Numerous machines have been devised, but all failed, until the past year, when two harvesters were brought out that promise well. They may be so improved that they will take the place of hand labor in the field. Many devices are contrived on which to draw the long bundles of fodder from field to silo, but the vehicle most used is a farm wagon with the usual flat hayrack upon it, floored over. The gavels are picked up from the ground by a man, and handed up to the driver of the wagon, who deposits them on the rack, the tops all one way. The load of two thousand pounds is quickly put on, and the load is driven to the silo. Others use a low-swung platform, hung between the widely separated fore and rear wheels of a wagon, and the loader lays the gavels upon the platform without assistance.

At the silo the process is substantially now everywhere alike. The silage-cutter is run by a steam engine of eight-horse power. The cutter has a carrier that elevates the cut silage up over the walls of the silo. The fodder is unloaded from the wagon directly upon the table of the cutter without rehandling. The silage is kept leveled in the pits, but only now and then does a farmer attach any importance to the tramping that was once considered so essential.

The writer has a platform three and a half feet square hung just below the upper end of the carrier. The silage, as it is thrown out, falls upon this platform, quickly forming a pyramid of the fine fodder. The cut silage, as it slides down the slant of this pyramid, is given a "shoot" to the sides, and in falling twenty-five feet, or more, is thrown all over the surface of the pit. It accomplishes by its own gravity what a man is otherwise required to do with forks. As the silage will naturally be the highest at the walls, the grain is equally distributed through the mass, and the labor of an hour per day in the pit has resulted better than when a man was constantly employed, for now I have no mouldy or spoiled silage in the corners and along the sides of the pit, which did happen to some extent when tramping was indulged in.

How to cover, is claiming some attention, as the old ways of close covering and heavy weighting have proved more damaging to the top layer of silage than no covering at all. In Ohio the custom of putting on a few inches of wet straw immediately after the silage is in and leveled off, is rapidly gaining favor. Some put on wet swale hay, and now and then a man does not cover with anything, and has as good success as any one. Wet chaff, or straw, cut fine, on being dampened down, has proven as perfect a cover as any. Still, cover as one may, there will be a loss of about two inches of silage on the surface in any event.

Low Farm Fences.—A fence five and a-half feet high may cause more breachiness in cattle and horses than a well constructed and maintained fence four and a half feet in height. When a few rails or boards are off, or the top wire down, from the high fence, the opening looks large, and stock will crowd or jump over. If the stock had always been kept on a farm where the fences were low they would not make the attempt to jump. A board or wire fence four feet high, or a rail fence four and a-half feet high, if kept in good repair, will answer every purpose of those one foot higher.

AN IMPROVED HORSE STALL.

W. V. FARMER.

The value of a clean, dry stall for the family horses cannot be overestimated, and all horse owners know the many disadvantages arising from horses standing upon plank floors. The common earth floor gives the stableman so much work to keep the horse clean that it has long since been condemned as too dirty for a good horse. After examining many stalls, I have constructed one that gives entire satisfaction in every way. Its merit consists chiefly in its simplicity. In the center of the stall—a large box stall—I dug a pit eighteen inches in diameter and three feet deep; into this I put cobble stones, the size of a horse's foot, until they reached the top; then I placed three large, flat stones, which just filled the top of the pit. A wagon load of ground limestone was spread around the outer edge of the stall, and raked toward the center, giving it a gentle slope in this direction. Over this was spread two inches of yellow clay, well tamped. The stall, when thus completed, has the appearance of an oval dish, and carries all the urine, from either horse or mare, to the center of the stall and into the pit, where it gradually soaks away into the ground. There is no opening in the bottom of the pit, and, therefore, no bad odor comes back into the stable, as often occurs where a drain pipe is used to carry off the urine. Another advantage in this stall is the shape, which more nearly fits the horse while lying down, and requires less straw for bedding. A tile drain from the pit would be useful on a farm, or wherever the urine can be made available for manure.

POULTRY CHATS.

A man blames the hens when eggs are scarce and in demand, and he has none to sell. Is not the blame well placed at his door when a comfortable house and proper diet have never been theirs? He argues that the manger rack in the horse stable under the barn is good enough for any chicken, the dung heap ample to provide them with a living.

Feather farming ought to pay. Geese and ducks are the fowls for this purpose. Good, clean, geese feathers will command at least forty cents per pound. For this one revenue it would pay a farmer to keep a number of White China or Toulouse geese. They are a hardy fowl and roam in the meadows and fields in search of food and live well on much that a chicken would not touch.

Straw is a very good nesting material for laying hens. Sawdust is also used and is quite cleanly and convenient. For sitting hens tobacco stems keep away vermin, insuring a close, steady sitting, which brings more chicks when the time arrives for hatching. The material for nests should be renewed every other week, and some supply it once a week. With clean quarters and a quiet, secluded nest, the flock will do excellent work throughout the season.

Wheat has and will continue to be one of the best foods for laying hens, as it contains the elements that stimulate egg production. Hens will always eagerly consume as much wheat as is fed to them. It is best to be a little moderate in its use, owing to its fattening qualities, as fat hens soon forget how to lay. Some feed screenings, or broken wheat, but no farmer who raises his own grain should consider for a moment the use of anything but sound old wheat.

Failure often comes from attempting too much. A single variety of pure-bred fowls, turkeys, ducks, or geese can all be raised on the same farm without danger of intermixing. Better to handle six varieties and be successful than two dozen and only partially succeed. Specialty farming, stock raising, fruit culture and horticulture are not successful together, being surrounded with all about you on the same farm. Unless ample capital with intelligent management is provided, the farm cannot do well.

As the egg of the hen contains nearly all the elements constituting the human body, it is reasonable to suppose that a flock of hens require a constant variety of food to make up the egg. It should, therefore, be the aim of poultry raisers to study the feeding of fowls economically and judiciously, keeping the question of egg-forming materials always in view. The success we read about by large poultry breeders, lies hidden in their knowledge of how to feed—which they have discovered by observation and study.

THE ASIATIC FOWLS.

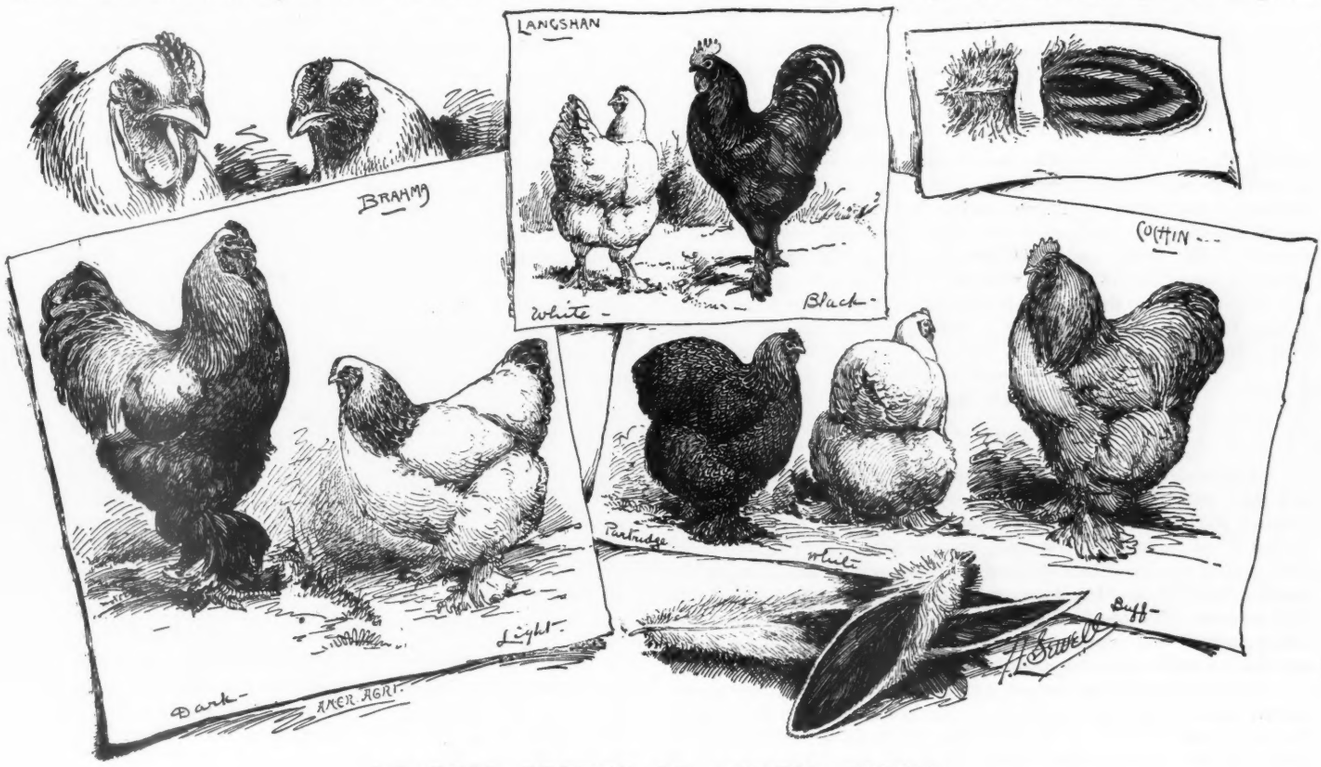
FRANKLANE L. SEWALL.

Probably no other fowls have done more to stimulate the interest in high-bred poultry than have the Asiatic races. They are the largest and most imposing breeds extant, and always attract much attention at poultry exhibitions for their magnificent carriage and form. Their rich and lustrous coloring and beautiful penciling are also strong factors in adding devotees to the ranks of their admirers from among the class who take pleasure in breeding for fine feather, and this is not a small portion of the fanciers of the day. It was the races of the Brahma and Cochin which made such a furore for large fowls in the "hen fever days." These birds were rare then, and fabulous prices were given for them; not exceeding, however, many prices of the present day realized by the breeders of prize specimens at the largest exhibitions.

The Brahmas are probably the best known of any thoroughbred fowl among American poultry keepers. It is the largest of all, twelve pounds being attained by many matured males. The carriage of a fine old Brahma cock as he moves about among his flock is truly a noble sight. The production of perfectly patterned penciling, with the coveted silver ground color on the females of the Dark Brahma taxes the study of the most skillful fanciers; and the clearly-laced hackles and tail coverts of the Lights, showing strong black points, with a pure white surface, have been points with which few have succeeded. As to economic value, the Brahmas rank high. There are many good layers among them, so that if one keeps them for eggs, breeding from the best layers among them, he will soon have a very productive strain. Their eggs are very large, and of a rich color. The Brahma is extensively used in crosses to obtain broilers, and fowls for the fatting pens, both in this country and Europe. There are now being bred pure white Brahmas, claimed to be sports from the Lights.

The Cochin traces to that well-known Shanghai "that grew so tall," although careful selective breeding has made a great change. And now we see in the Cochin lines of harmony scarcely excelled in any other type, where in the old Shanghai they were angular and ungraceful. The Cochins present to the eye a superb fowl. They appear, through their wonderful development of feather, larger even than the Brahmas, although in weight they are hardly their equal. The standard colors of the Cochin are White, Black, Buff, and Partridge, the latter presenting nearly the same difficulties in producing the color as the Dark Brahma, the pattern of the penciling on the females being alike. The ground color, however, is a golden mahogany instead of silver. The distribution of the colors on the Partridge cock is the same as on the Dark Brahma, only being rich golden mahogany where the Dark Brahma is silvery white. It is not improbable that this bird has been used in strengthening the precision of penciling on the Dark Brahma. In the "Lordly Buff" we have the truest ideal Cochin form—the longest feather and most abundant fluff—which goes largely to making up the Cochin's round appearance. The Cochin is hardly an economic bird, being bred mostly for the fancy. It is fairly productive, however, and quite hardy.

The Langshan is the latest arrival among the Asiatics, but it has already gained the reputation of being the most productive. It is the smallest and the most active of them all. I have seen cockerels, however, that attained ten pounds at nine months, although that is about a pound or two more than usual. The Blacks were the first color brought from China, their native country, and have proven the most hardy. The Whites are Albino sports from the Blacks, and not generally considered quite as strong as the latter. They are also seen of a Maltese blue. Splashed White and Black specimens have as well been shown of late. As egg producers, the Langshans are esteemed very highly, and as birds for the table they are excellent. No fowl I have ever kept has brought better returns for the expense of its keep than this breed. The picture presented by a fine flock of them on a lawn, their shiny black coats reflecting the sun in greens as bright as the grass, in which they search so lively for insects, is a beautiful sight, and well worth going a long distance to see.



LEADING BREEDS OF ASIATIC FOWLS.

BROILER RAISING.

JOHN W. CAUGHEY.

My article in a former number of the AMERICAN AGRICULTURIST has brought me a large number of inquiries. I spoke of the profits that can be obtained from the raising of broilers. "In the early spring," I said, "many wealthy persons, as well as the restaurants and fashionable hotels of the large cities, pay from $1.50 to $2 per pair. At these prices a flock of 400 broilers would pay a handsome profit over the cost of raising." I ought, perhaps, to have added further particulars to prevent being misunderstood. These prices are obtainable, but not by those who ship to middlemen, who must take out their profit, and who, instead of seeking individual customers, sell in the market at whatever prices may be current. If the raiser of a small flock of broilers will seek out private customers who are able and willing to pay such prices, and there are many such in the cities of New York, Brooklyn, Orange, Newark, and Elizabeth, he can make such profits. But if he ships to market, as do most of the broiler raisers in Hammonton, and other New Jersey

towns, trusting to commission merchants to dispose of them in the open market, he may fail of obtaining these prices. In these large markets he is brought into competition with broiler raisers from Kentucky, Indiana, Ohio, and Pennsylvania. In some of these localities the low price of grain enables the producer to sell at a lower price than the New Jersey raiser, and the large stock necessarily produces a lower price in the market. But with private customers, this competition is avoided.

In my own personal experience—and I speak from that, and not merely from theory—I have been able to raise broilers at a very low figure and sell them at a high one. I had a brooding house of 2,500 chicks capacity; the incubator held 1,008 eggs, and I could average even in cold weather 800 chicks out of 1,000 eggs. The building was heated by natural gas, and the brooders were arranged on each side of the building over the pens. Everything was kept clean and neat. With such arrangements, broilers can be produced ready for market at eight cents per pound; they can be raised at seven cents. I have heard of a large breeder at Sponk, Long Island, who claims that he rears them at five cents per pound. Much depends upon the arrangements one makes for this business. By taking advantage of the best appliances, by profiting by favorable local conditions, and especially by wisdom in marketing the stock

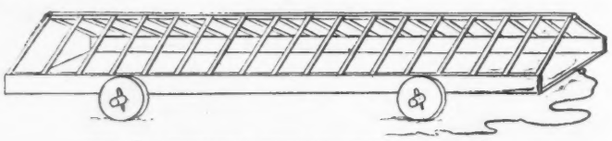


FIG. 1. MOVABLE FEED TROUGH FOR FOWLS.

reared, there is no reason why one cannot make a handsome profit in rearing even a small flock of broilers. It is in making savings, savings in the purchase of eggs, savings in the hatching and brooding of the chickens, savings in the food consumed in rearing, and savings in the marketing of the products, that the profits of this business consist, and the man who makes these savings will be the one who can put to the credit side of his profit and loss account the largest figures. There is money in raising broilers for the one who will take pains to make it.

THE HEN'S DELIGHT.

HOLLISTER SAGE, CONNECTICUT.

In nothing are poultry keepers more culpable than in the manner they feed their fowls. The cleanest grains and mashes are thrown in the dirt and mud oftentimes, so that the birds are compelled to eat a greater or less proportion of filth. How to feed without having the food befouled by the upsetting of the dish, by the wading through it of the flock, or by having it scratched full of dirt and manure, after the feeding is done, is a problem all of us would like to solve. The roosting of fowls on or over feed troughs is still another practice everyone desires to reform.

These difficulties no longer exist, however, if one uses a protected feed trough on wheels that can be rolled from the poultry house or yard as soon as it is empty. Such an invention greeted my delighted vision while calling on a neighbor recently, and is shown in Fig. 1. It may be made at home easily. To the edges of a board eight feet long and twelve inches wide are first nailed three-inch strips, forming a trough two inches deep. Short pieces of lath extend from these pieces on either side to a little ridge pole.

FIG. 2. FEED BOX.

The angle formed must not be a sharp one, but very obtuse, that the birds may reach between the slats and get every particle of the food. The slats need not be very near together. The trough is mounted on little wooden wheels—disks sawed from a board, and fitted on axles of the same material. Both axles are screwed firmly to the under side of the trough. In turning, it is easy to raise one end and swing it on the other wheels. A cord to draw it by is attached to either end.

To put the food through between the slats would be a slow and difficult operation. To obviate the necessity for doing this my friend has two flat boxes, one of which is seen in Fig. 2, each half as long as the feed car. These slide into it from either end and fit loosely. They are drawn out, filled and pushed back into place before the car is rolled among the birds. Said the owner, "My fowls were at first badly frightened by the rolling trough, but they soon came to love it, and cling to it as to a dear friend. As soon as the door opens now, they fly to it and some even mount it and ride in." It is a genuine labor saver, never needs cleaning, and for soft feeds is without a peer in usefulness among poultry appliances. Whoever makes one will enjoy the consciousness of having provided his flock with food free from filth, and his eggs and broilers will become greatly increased in value for the family table.

HOMEMADE EAVES TROUGHS AND HANGERS.

L. D. SNOOK, NEW YORK.

All farm, or other buildings, should have eaves troughs, especially over all doors or passage-ways. Not all house owners can afford to provide metal troughs, but serviceable wooden ones may

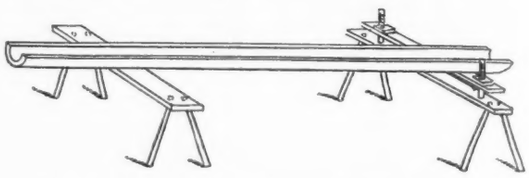


FIG. 1. BENCHES FOR MAKING EAVES TROUGH.

be supplied at little expense. The best ones are usually made from a long, straight sapling of some durable wood, such as pine, cedar, or chestnut. A stick is obtained of the desired length, and not over five inches in diameter at the top, one side is flattened down to at least four inches across at the small end, and all bark removed, and if the large end is more than seven inches in diameter, it should be shaved down to that size, or even smaller, which can be easily done by the use of a clamp to hold it on the benches shown in Fig. 1. When the proper size is obtained, it is clamped in the position shown, and, by the use of a light axe-hatchet and gauges, a channel is excavated. With straight-grained timber, free from knots, this work is quickly done, and should be finished smooth inside by the use of a short plane. When completed, it should be kept under shelter for several months, or placed bottom up out of doors. Care should be taken that it does not twist or warp. After it is seasoned, apply two coats of oil, and it is good for at least twenty-five years' service by simply applying a coat of oil to the inside, and paint to the outside every ten years. If no suitable timber is at hand, obtain well-seasoned pine, or other durable lumber three-quarters of an inch thick and five inches wide. Make a tongue and groove, putting together with nails in the form shown in Fig. 2, filling the grooves with paint before it is put together. Another manner is shown in Fig. 3, paint being applied at the junction before nailing. Use tenpenny wire nails, placing them about eight inches apart to prevent all danger from leakage. All forms of eaves troughs may be cheaply attached to buildings by the use of wooden brackets, as in Fig. 4, care being taken to secure the end of the bracket firmly to the building. A worn-out buggy tire, bent in the form as indicated in Fig. 5, makes a neat looking and secure fastening. A hole should be made in the iron where it comes in contact with the trough for putting in a screw or nail. Fig. 6 has sectional views of the solid trough, which may have either a circular or V-shaped cavity. An active man can make

FIG. 2. FIG. 3. EAVES TROUGH MADE OF TWO BOARDS.

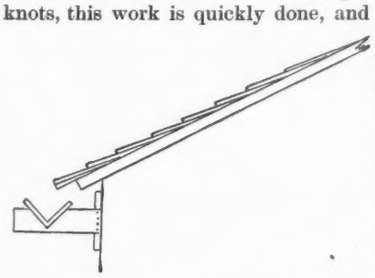


FIG. 4. WOODEN BRACKET FOR TROUGH.

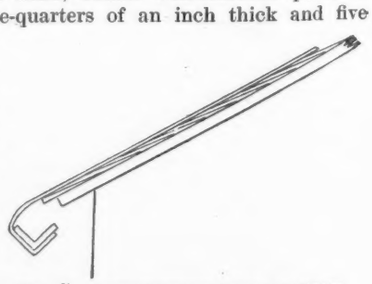


FIG. 5. INEXPENSIVE IRON HANGER.

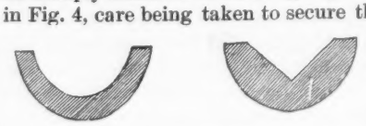


FIG. 6. EXCAVATED EAVES TROUGHS.

fifty feet of the solid trough in a day, 150 feet of the board style; this will pay well, as tin eaves troughs cost from fifteen to twenty-five cents per lineal foot, put up, and will prove no more serviceable than those of wood when made and kept in order as directed.

A BACTERIAL DISEASE OF CELERY.

DR. B. D. HALSTED, NEW JERSEY EXPERIMENT STATION.

While in the celery fields near Greenville and Bayonne, New Jersey, attention was attracted to a peculiar blight of the celery,

FIG. 1. CELERY LEAF AFFECTED WITH BACTERIA.

and particularly the Golden Plume variety. The affected leaves were badly blotched with brown, the diseased spots having a watery appearance that suggested the work of nematodes (eel-worms). A microscopic examination of the infected leaves showed that while nematodes and all forms of filamentous fungi were absent, there was an abundance of bacteria uniformly in all the diseased patches. It was an easy matter to isolate these germs and grow them, free from anything else, for inoculation. Leaves of celery were treated with the pure bacteria, and at the end of the third day, as a rule, the disease had spread throughout their whole extent. The germs, when introduced into the core of a plant, cause this tender portion to decay with great rapidity. The appearance of a leaf affected with bacteria is shown in Fig. 1. All the dark portion abounds in germs, a number of which are shown in Fig. 2. A central portion of a celery plant, with its heart infested and one of the outermost leaf stalks decayed and fallen, is shown in Fig. 3. The dark, wavy band upon the base of the outermost petiole shows where the bacteria were at work, and imperfectly represents the appearance of the disease as it spreads through the tender substance of the celery. It was observed that the bacteria increased most rapidly when the celery was kept constantly moist, but not submerged. Thus, stalks placed partly under water to which germs had been added, decayed quickly near the surface, while the portion submerged was the last to spoil. The practical lesson learned from this is to keep the celery dry, or else place it under pure water. That this disease is serious, may be judged from the fact that a large grower has lost nearly his whole last crop, the middle of each plant melting away to a worthless mass of rottenness. The same trucker has lost a large per cent. of his carrots from bacterial decay, and this suggests the probable connection between the two. The spraying that has proved effective against the celery blight will, doubtless, check the bacteria, if applied at the proper time.

FIG. 2. GERMS OF CELERY BACTERIA.

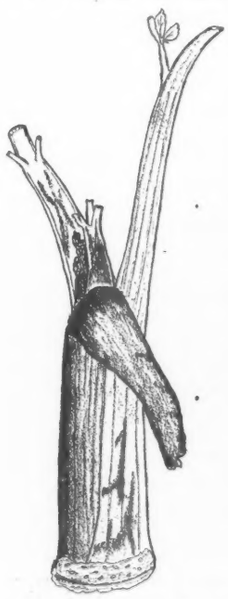


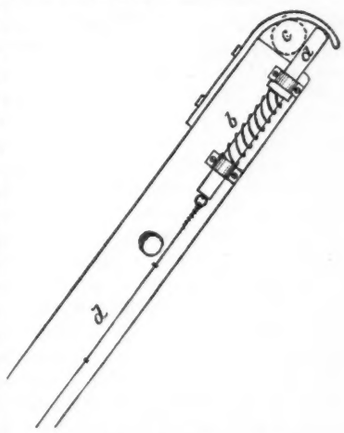
FIG. 3. CORE OF PLANT DESTROYED BY BACTERIA.

DOUBLE LADDER FOR APPLE PICKING.

K. C. EGBERT, OHIO.

To avoid injury to trees by leaning ladders against them, a self-supporting double ladder, made of two ordinary ladders attached at the top, has been used. With such an arrangement two men are required, and, owing to unevenness of ground, it is sometimes difficult to set the double ladder. Devices for varying the length of one leg might be used, but it is occasionally necessary to use a single ladder.

A mechanical device for fastening the two ladders together at the top is suggested in the illustration. It is attached to each of the side poles of one ladder and grasps the top, or other round, of the other ladder, which thus may be disengaged instantly and used separately. The engraving represents the inner aspect of one side—the two sides to be symmetrical and just wide enough apart to be included by those of the other ladder at the upper round. A pin *a* is pulled down by a wire, *d*, to admit the round *c*, and shoved back into place by a spiral spring, *b*. Such devices for other purposes may be purchased at the stores, or the separate parts may be devised and fashioned by any one familiar with tools. The No. 16 wire is passed through staples on the inner side and attached to the round grasped by the upper hand in moving the ladder. This round is loose so that it can be turned. Care should be taken to have the arrangement as compact and smooth as possible so as not to catch small limbs when used singly. Both ladders may then be used for general purposes.

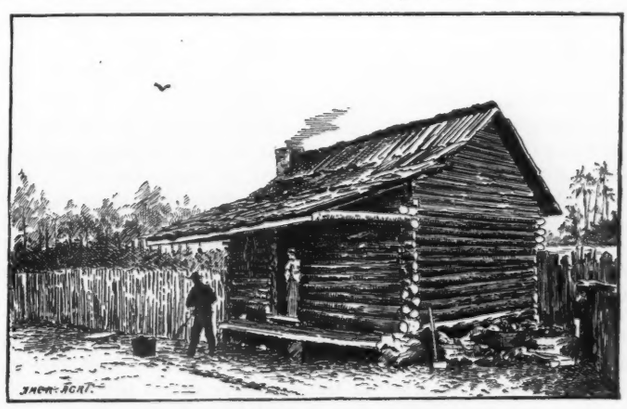


DEVICE FOR FASTENING TWO LADDERS TOGETHER.

STARTING ON TWO HUNDRED DOLLARS.

CHARLES BIRCH, ALABAMA.

At the end of a long illness brought on by overwork and the unfavorable influence of a Northern climate, the physician advised me to go South, and engage in open-air work. My whole available capital was invested in the stock and good-will of a grocery store in a small New Jersey village. The whole was offered for sale, and the first reasonable cash tender was accepted. After settling the



A SOUTHERN HOMESTEADER'S FIRST HOUSE.

expenses of sickness, and other liabilities I started for Alabama, where I arrived with $200. This was a very limited amount of capital with which to buy a farm, stock it, and set up as a farmer. But purchase of a farm was not necessary, for there was plenty of government land open for entry. So I made a homestead entry of a quarter section, and proceeded to build a habitation. The style of architecture was peculiarly American, the material,

logs hewed to flatness on two sides, left with the other two, and notched at the ends. The logs for the sides were sixteen and for the ends fourteen feet long, selected with a view to securing as much uniformity in size as possible. When the sides were complete the plates and rafters were fastened in place by two-inch pins of white oak. The roof was covered with "shakes" riven from straight-grained red-oak logs sawed to the proper length. The openings for doors, windows and fireplace were cut out, and then came "chinking" the interstices with thin pieces of oak, plastered over with tempered clay. When the door, window and chimney were completed, the structure presented the appearance depicted in the engraving. A barn, poultry-house and pigpen were built of similar materials.

The next step was to clear and fence five acres, the fencing material being the trunks of stout saplings and small trees selected in clearing the ground, trimmed of branches and cut to the length of fifteen feet. The improvements on my new home had cost nothing so far, except my labor.

The first cash outlay was for a yoke of oxen and a wagon, thirty dollars; a cow fifteen dollars; two pigs two dollars; two dozen hens four dollars and eighty cents—in all fifty-one dollars and eighty cents. The prices were extremely moderate, but they were such as prevailed in Alabama in the fall. Fifty bushels of cotton seed at ten cents a bushel were fed in connection with corn fodder and corn to the cattle and pigs, and they all fattened on it. There are thousands of acres of free range, covered with grass, all around me, upon which the cattle could have subsisted through the winter, but they would not have been in good working condition in spring. Winters are short in Alabama, three months being the longest time it is ever necessary to feed stock.

When spring came I planted three acres to corn, one to potatoes and one to sorghum, and made a vegetable garden of half an acre. The yield was 130 bushels of corn, eighty bushels of potatoes and a fine growth of sorghum which proved the most profitable of all, producing thirty bushels of seed and 130 gallons of syrup, to say nothing of the bagasse as fodder. As soon as the potatoes were out of the ground I sowed it to buckwheat and followed the sorghum by turnips. There were not large yields, but the land was still encumbered with stumps and roots. In addition to the field crops, there was a yield of forty dollars from the garden; the hens laid 110 dozen eggs, and the cow, an ordinary "native," three years old, produced milk from which we made four pounds of butter weekly, besides what milk was used in the family. One of the sows raised six, and the other ten pigs, which were fattened on corn and cotton seed, and sold at Christmas for eight cents a pound, dressed. The balance sheet was as follows:

OUTLAY.		
Stock as (above)	$51.80	
Feed for cattle	12.00	
Feed for two hogs	2.00	
Feed for poultry	1.75	
		$67.55
INCOME.		
Corn, 130 bushels at 50	$65.00	
Potatoes, 80 bushels at 50c	40.00	
Sorghum syrup, 200 gallons at 30c	60.00	
Buckwheat, 20 bushels at 75c	15.00	
Turnips, 40 bushels at 30c	12.00	
Garden truck	40.00	
Butter sold	4.00	
Eggs sold	10.00	
Hogs	144.00	390.00
Balance, profit		$322.45

Besides, there were left enough small potatoes and turnips to carry the two brood-sows through this winter, sorghum enough, with the addition of a little cotton seed, to winter the cattle, and corn nubbins sufficient for the poultry. This is a rather modest exhibit for a year's work, but I feel now fairly started, with 160 acres of land, comfortable, if humble buildings, good health, and the experience which it is hoped will enable me to do better the second year.

The House Cellar.—The cellar should be dry, well lighted and ventilated, non-freezing, and at least seven and a half feet in height. A basket carried on the shoulders should not strike the ceiling. An outside cellar door is useful for carrying down milk, fruit and vegetables. It saves tracking dirt through the house. A narrow trench fifteen inches deep around the cellar floor, close to the wall, filled nearly full with coarse gravel or broken stone, and covered with earth, will catch all water oozing in, which should then be carried away by a tile-drain. Double windows will keep out the cold and let in the light. Use wire screens instead of windows during the summer, trailing some morning glories, or other quick-growing vines on the outside for a shade.

BETTER CHEESE MAKING.

JOHN GOULD, OHIO.

To-day, as never before, is the cheese maker called to account for the quality of his produce, and it is not unpardonable that it is so. The foreign and domestic markets are becoming more than ever critical, and the best grades of cheese are in demand. Since the Wisconsin and Canadian makers have taken such a step in advance, brought about by their plans of State instruction, it is not hard to see that there is such a thing as education in cheese making, and that the sooner this idea is recognized and acted upon, the better. Last year the cheese makers of New York and Ohio saw their best cheese out-sold a full cent by Wisconsin and Canada, for the reason that it was better made, more uniform, and had a quality about it that the market recognized, and paid for. To all this, what answer? First, and all the time, the solution is a practical one—Education! The cheese maker must comprehend that scientific skill is required and a intimate knowledge of the market and its demands. The farmer, as never before, must rise to the importance of united effort to furnish the very best milk for the factory. The farmers supplying each factory should meet often, talk over mutual interests, and act in concert.

To progress, there must be an ignoring of not only prejudice, but of obstinate refusal to work in better ways. Every patron should be the reader of a weekly dairy paper, and the possessor of standard books on dairy science, and should never allow a month to pass that has not seen some improvement upon the farm and in the dairy.

The farmer's education must be thorough. There is no excuse now for not knowing the leading principles of the dairy and its management; feeding, the care of milk, and how to get it to the factory so that it shall be the perfect article, out of which the perfect cheese can be made.

Another thing that must be remedied is the cheap and badly-located factory, so near to others, that the operator receives a meager support at best, and to secure that has to reduce prices, which must, in one way or another, affect the patrons. Far too often poor cheese is turned out, so made as to carry extra "heft," which is always at the expense of quality.

The factory of the future will be a well built and appointed structure, with good sanitary engineering, so that the usual factory smell will be absent. The present "boss" will be superseded by a superintendent, a graduate of a State dairy school, and competent to take charge of a factory. An imitator who can only do as he has once been told, is as helpless as a child, when the time comes for the exercise of independent skill. The new man must be a student, an investigator, quick to notice changes, and ready to act upon the instant when necessary. He must have an intimate knowledge of the market and its wants, and of the best transportation. This factory ought to have at least 10,000 pounds of milk guaranteed for each day. Then there can be a production which will warrant the hiring of the best maker and help, and of putting the factory into the best possible condition to build up its reputation, and that of its patrons. When the patrons of a factory have a pride in their produce, and are ever trying to excel, they are on the highway to success. Education, honest endeavor, and applied skill, will not only merit reward, but secure it.

GOOD WALKS FOR THE FARM.

L. D. BARRINGTON, NEW YORK.

Most farm premises are not adequately provided with properly-made walks. The footpath from the front gate to the house, and from the house to the barn should be covered with some better material than dirt. In a section where flat stones can be easily obtained they will make the most economical and durable walk. They need not be wide enough to reach across the walk, but may be laid side by side until the desired width is obtained. Cobble stone may be used. In making a stone walk, bank the earth at least two inches above the level, and press the stones firmly into this bank. Round stones should be two inches or less in diameter, and pounded down with a sledge. It will be difficult to keep the grass out of this walk unless salt, or very strong brine, is frequently scattered over it. Gravel, when easily obtainable, makes a durable and cheap walk, and one that is always dry. The foundation should be excavated to the depth of at least one foot, and filled with small or broken stone to within six inches of the top, then fill the remainder with gravel, making the top a little rounding. The gravel should have been previously freed from all earth by sifting or washing. Next to flat stone, plank walks are the cheapest and best. If planks

are laid lengthwise of the walk, they should be firmly spiked at the ends to pieces of some durable wood sunk in the soil, and if such pieces and the lower sides of the planks are coated with several applications of crude petroleum, they will last much longer. Inch boards may be used instead of plank. The walk from the barn to the house is the most important, as it is from this source that the most mud is tracked into the house. If dry walks are provided the housewife will each year be saved many hours of hard, disagreeable work in cleaning the kitchen floor.

HOW TO BUILD AN INEXPENSIVE HOTHOUSE.

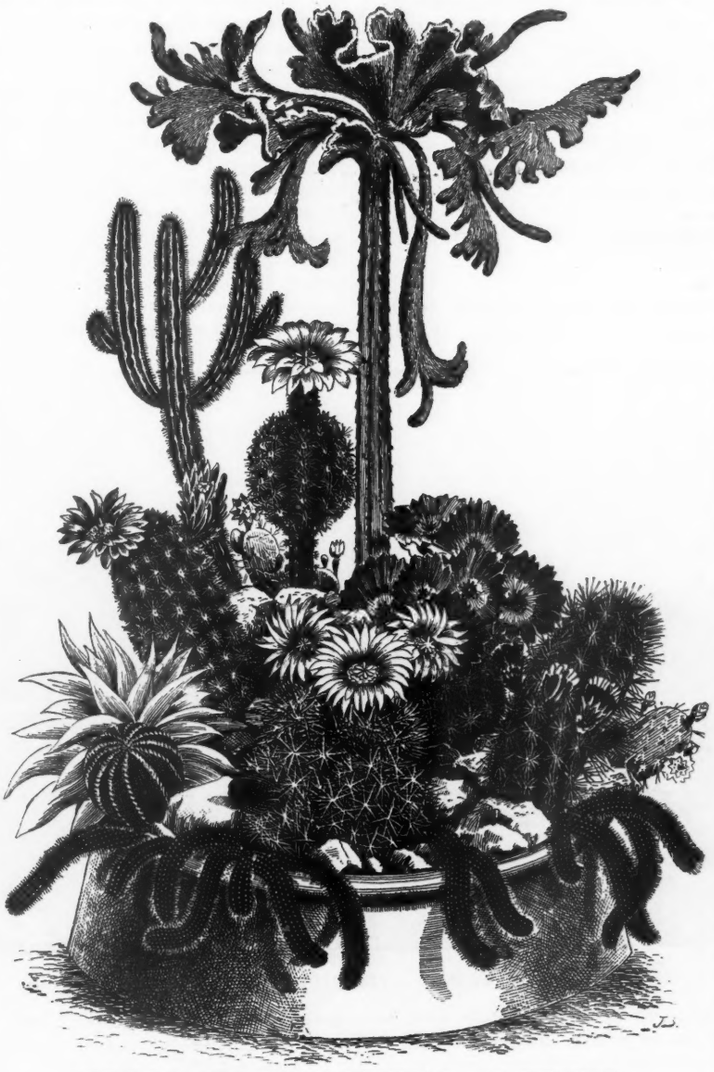
PROF. L. R. TAFT, MICH. AGRICULTURAL COLLEGE.

A hothouse can be cheaply constructed by setting posts firmly in the ground, sheathing them on the outside, and covering this with siding. The posts should be cut off square at the height of four feet, and a 2x6 plank nailed on as a plate. For a narrow house an even span roof is preferable, but if the house is eighteen or twenty feet wide, and is designed for forcing vegetables or flowers, the three-quarter span is generally used. A 1x4 inch ridge board is placed at the height of eight feet, and sash bars seven feet long should be cut off at either end, so as to make good joints, and securely fastened in place. The glass should not be less than 12x18 inches, and may vary from that size to 18x24 inches, the size generally used being either fourteen or sixteen inches wide. The sash bars should vary with the size of the glass, 1x2 inches being large enough for twelve inch glass, while eighteen inch glass will need a sash bar 1¼x2½ inches. The glass may be either butted, or slightly (one-eighth-inch) lapped, bedded in putty and fastened with wire brads or large zinc points. The best method of heating the house is by hot water in small pipes. The size of the heater must depend on the temperature at which the house is to be kept. The climate, construction of the house, etc., should also be considered. The capacity of a heater is measured by the amount of grate and fire surface it contains, and to warm a house 50x12 feet to 70° in zero weather, would require about 200 square inches of grate surface, and from twenty-five to forty square feet, according to its arrangement, of heating surface. For two houses the heater need not be quite twice as large. The piping should be of one and one-quarter inch wrought iron, with suitable feed and return pipes. For a temperature of 45° in severe weather, 150 square feet of radiation would be ample for each house, while if 70° was desired 250 square feet would be none too much. For most purposes, the pipes should be placed beneath the side benches, but it is sometimes desirable to have some of the pipes fastened to the sash-bars above the benches. If the under bench system is adopted, a one and one-half inch flow pipe on each side of the house could carry the water to the farther end, and three one and one-fourth inch pipes, as returns would make up the required surface for a temperature of 45°, or six returns would be sufficient for 70°. Hot water, with modern heaters and iron pipes, is twenty-five per cent. cheaper than steam, and in every way more satisfactory for greenhouse heating than any other methods that have been used.

A CACTUS ROCKERY.

H. M. PHELPS, NEW YORK.

The various species of Cactus are among the most singular productions to be found in the vegetable kingdom, combining curious and grotesque forms with rare and exquisite beauty of flowers; and are foremost among the plants that are rapidly gaining in public favor. Hardly a collection of flowers can be found at the present day, which cannot boast of at least a few of this beautiful and interesting family of plants. Indeed, we frequently find the amateur growing from fifty to one hundred kinds. It is only during the last few years that cactus culture has become so popular or that the plants could be bought at a reasonable price. Even now several species are catalogued at from $50 to $200 each. Of course these prices are for exceedingly rare sorts; but not always the most beautiful, as some of the most desirable species can be purchased at very low rates. In disposing of a collection of cactuses, a miniature rockery for the window will be found especially desirable—"giving the greatest amount of pleasure with the least possible inconvenience." Procure an ordinary fernery base, which can be purchased of almost any seed or plant dealer; directly on the bottom put at least one inch of finely-broken charcoal, small stones, broken bits of jars, or some similar material to furnish perfect drainage; cover this with a few inches of soil, one-half of which consists of sand, making the center the highest. Select some pleasing colors of stone, as marble and granite, red and grey, also, if convenient, some seashore pebbles, shells, etc. Carefully arrange the stones and plants, taking care to set the slender-growing species *in* the soil and the globular sorts *on* the soil. If the globular ones are not rooted, a wire may be bent over the top to hold them in place till they have become rooted. If there are any dead, dried roots they must be cut off close to the plant, and only the live, fresh ones allowed to remain. The soil should neither be damp nor dust dry, but better have it too dry than too wet. See that the roots are well spread out and the soil pressed firmly between them. For firming the soil a stick from six to eight inches long, one-half inch wide at one end and one inch wide at the other, may be used. The plants may be wrapped in a piece of paper if they cannot be handled without; lay the pieces of stone between them in such a manner as to produce the most pleasing effect in contrast with the plants. Small white pebbles may be used to "fill in" to cover the soil, and lay close round the plants. These pebbles will also prove advantageous in preventing the soil from splashing on the plants when being watered.



GROUP OF ORNAMENTAL CACTUSES.

When the rockery is completed, place it on a stand, table or stool, sufficiently stout to hold its weight without danger of breaking; place it where it can have the full and direct rays of the sun as much as possible. All cactuses enjoy plenty of sunlight. The rockery should be turned round occasionally and, as a rule, no fertilizer whatever should be used. The temperature of an ordinary sitting-room will be congenial to the plants. During winter keep quite dry—but do not let the plants wither—and free from frost; during spring and summer, give a little more water, also plenty of

light and heat. Under no circumstances must the soil be kept wet "for to keep a cactus wet is to give it a death blow." There are a few kinds that require nearly as much water as a geranium, while many others will live and thrive for months without a drop.

Advantages in several ways are afforded by the rockery feature. By a careful selection of species, not only a charming effect may be created in the various forms and colors, but in one or another it will rarely be without flowers. Care should be taken in selecting kinds that will bear the same treatment; do not put such as require but little water with those that require a great deal. After they are once planted, if they are watered properly and have light and air in abundance, they will take care of themselves without need of other attention for years, and will be sufficiently beautiful to please the most fastidious. The species named below are among the most desirable because they are greatly diversified in form and color, and produce their flowers at different seasons.

Cereus grandiflorus,	Cereus triangularis,	Echinopsis Eyriesii,
Echinocactus setispinus,	Echinocactus Simpsonii,	Echinocactus texensis,
Echinocereus pectinatus,	Mammillaria applanata,	Mammillaria decipiens,
Mammillaria Grahami,	Stapelia variegata,	Mammillaria pusilla,
Mammillaria stella aurata,	Opuntia frutescens,	Opuntia lurida,
Opuntia Tuna,	Opuntia Emoryi,	Opuntia Rafinesquii.

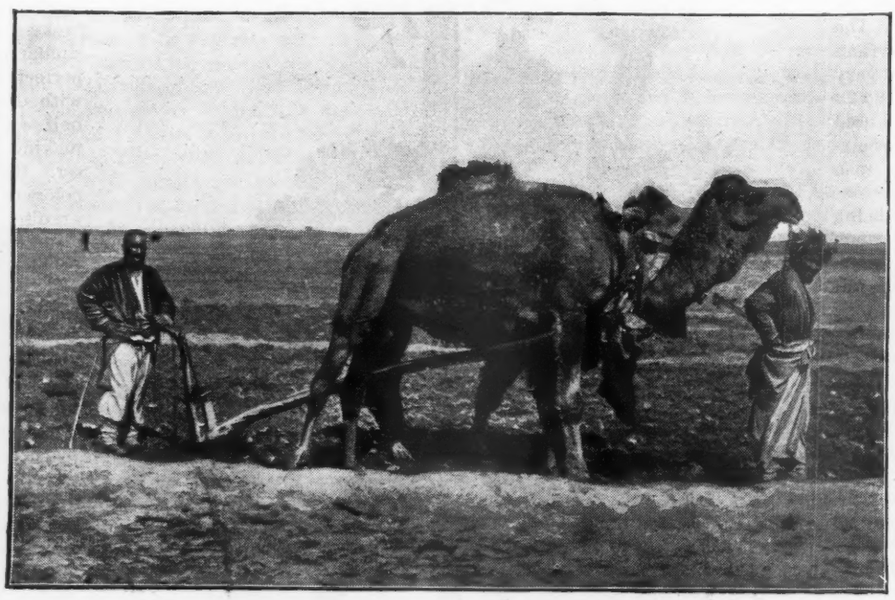
These sorts will fill a rockery beautifully, and at a very trifling cost. If desired the fernery base may be supplied by some home-made receptacle, if proper attention be given to drainage.

BARN BASEMENTS.

D. YATES.

All farmers who intend to build a new barn, or repair an old one, should, as a matter of economy, put in a basement. If built against a sidehill, great care should be used in putting up the back wall. A well-constructed underdrain should be placed under the wall. Where the wall comes in contact with earth, water lime should be used, as common mortar crumbles away so readily when alternately wet and dry. Basements can be placed under barns, even if the building stands upon perfectly level land. In that case a bridge about ten feet long should connect the building with the earth-filled driveway. This will be about as cheap as filling in with earth, and far better than piling up the earth against the main wall, as usually done. If stones are not plentiful or easily obtained, build the foundation walls only one foot above ground, laying the basement sills directly on them. Connect with the upper sills by heavy posts. Both the barn proper and basement are to be boarded up in the usual manner. The room underneath a barn is the cheapest and most desirable portion of the whole building. It makes a warm and comfortable place for stock in winter, and usually the manure is left there until hauled to the fields, and not left in the open yard to leach away its most valuable elements of fertility. More than a hundred loads of manure have been drawn in one season from underneath a barn 32x60, with a ten-foot basement, and the accumulation did not interfere with cattle and horses moving freely about.

If an old barn is to be moved or raised, the rich soil underneath the stables should be scattered over the fields as a valuable nitrogenous manure. This soil is especially valuable for gardens, as but few weed seed of any kind will be found in it. Barns, if possible, should front to the east or south, and the front of basement should be provided with rolling doors, as swinging doors break easily.



PLOWING IN TURKESTAN.

ROUND ABOUT THE PAMIRS.

F. C. CHAPPELL.

Until within the last few years little was known about the remote highlands of Central Asia; but the efforts of Dr. Lansdell, Mr. Litttledale, Captain Younghusband, Mr. Herbert Jones, and others, have gone a good way toward removing the general ignorance about a most interesting part of the world, a country, as it has been aptly remarked, "through whose solitudes are now traced the somewhat uncertain boundary lines of three great empires—the British, the Russian, and the Chinese." This region has hitherto been a dark corner of the earth. Yet it must present deadly perils to deter modern explorers from investigating it. Recent events have directed much attention to this part of the world, and the return of two well-known explorers, Captain Younghusband and Mr. H. Jones, has added to this interest by giving us the latest information on the subject.

Captain Younghusband describes the region of the Pamirs as consisting of a succession of long, broad, open valleys, running approximately parallel to each other in a general direction, from northeast to southwest, and separated by low ranges of mountains, rising only a few thousand feet above the valley bottoms. The lowest point of the Pamirs is 10,300 feet above sea level, the average being from 13,000 to 14,000 feet. An idea of the severe climate will be gained when I say that the thermometer, late in the autumn, registers 18° below zero. Early in August, water has been found to freeze if kept in a basin in a tent at night. In November, snow usually lies about knee deep. The native shepherds, an extremely hardy race, remain in these valleys during winter time, the sheep being left to forage for themselves, with very indifferent results, as will readily be imagined. Summer commences in May, if we may apply that term to a period when the snow only begins to melt. There is not more than about two months of even temperate weather, the remainder of the year being given over to an arctic coldness. Vegetation depends for moisture almost entirely on the snow accumulated on the mountains, rain being almost unknown. Mr. Jones found that those slopes which are exposed to the sun soon lose their moisture, and they and the plains beneath are parched into absolute barrenness. It is found, however, that trees can grow wherever the snow lies, as it protects their roots against the severe cold.

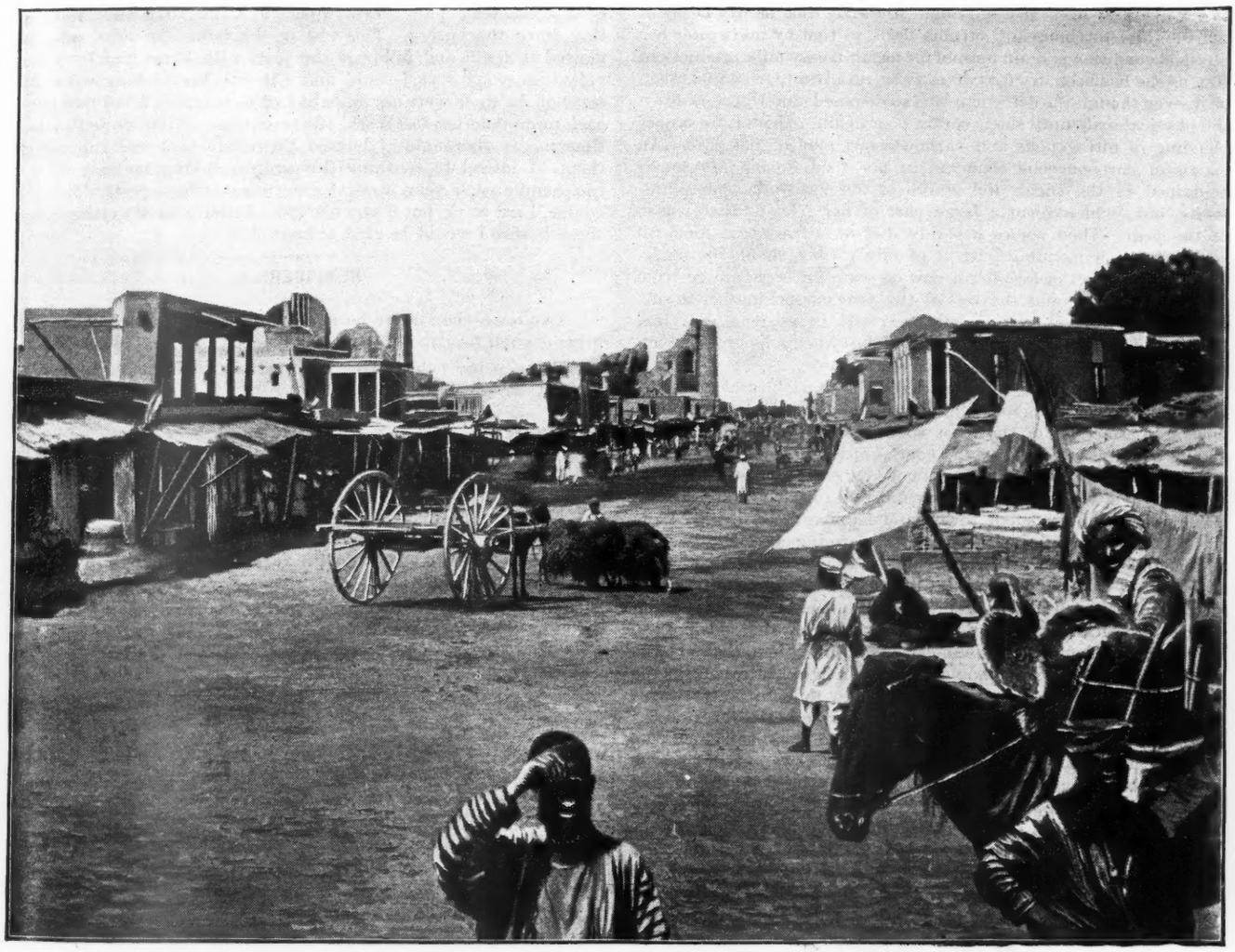
Although this region is peculiarly inhospitable, yet it must have been more so centuries back. When Captain Younghusband was traveling in this district he says he found signs of glaciers even in the valley bottoms. Although there are only very small glaciers now near the high peaks, he imagines that the valleys must at one time have been filled up with seas of ice; that the mountains must have formerly been of a considerably greater height than they are at present, and that in course of time they have crumbled, decomposed, and melted away, their remains falling into the valleys, thus choking and gradually filling them up; while the climate was too severe to allow of a sufficient rainfall to produce currents powerful enough to wash this *debris* away.

The Pamirs have a scanty population, hardy and strong. As in most countries where an elementary system of cultivation prevails, the women do most of the work. They are well built, vigorous and quite able to perform the duties that fall to them, such as milking, tending the flocks and herds, making up the cheeses, manufacturing the felts, and attending generally to all the wants of the

family. The men, with the exception of the shepherds, do practically nothing. Some of these tribes are veteran cut-throats, living on the proceeds of their raiding expeditions. In these adventures they will travel 200 miles of bleak and uninhabited country entirely on foot, carrying their food with them. They are dressed in thick, homemade woolen garments, and are so hardy that they sleep out in the open air in winter, and exist upon almost nothing. Captain Younghusband relates how on one occasion he gave some of these people two pounds of flour each and was told that this was a regular feast for them for three days.

Agriculture is the principal means of living, and the majority of the people are engaged in it. They were mostly to be found congregated in the lower part of the valley where it opens out opposite Nagar. Captain Younghusband ascertained, however, that the produce of the fields scarcely suffices for their wants, and they have to supplement it by cultivating apricots and other fruits which appear to be grown in considerable quantities in certain favorable parts of the country. In the upper valleys the people subsist by keeping herd together with his family in one room. "He has not a bed to sleep on, nor a chair to sit down upon; and the meanest Kirghis *yourt* is more artistically decorated than his grimy, unventilated *izba*. His farmyard is knee deep in dirt, and his cattle pens are built, if possible, beside a running stream, so that he can throw the manure into it, and have it washed away without further trouble."

The bazaars in Turkestan consist of long, narrow streets, lined on either side with booths behind which sit the proprietor of the stall, generally smoking his "kalioun." Here are sold tea, coffee, sugar, rice, spices, knives, gunpowder, dyes, bullets, etc. To these bazaars are brought the produce and manufactures of the surrounding district, this being the only means of trading in the country. The illustrations show a bazaar in Samarcand, and the native method of plowing in Turkestan.



A BAZAAR IN SAMARCAND.

sheep and goats, which, however, are not numerous. Mr. Jones found that tobacco culture would have a fine chance of success in Turkestan if the excise regulations were relaxed. He discovered that the silk industry was receiving much attention, while the government was trying to encourage improved methods of cultivation, and the introduction of Italian grain to replace the native sorts. These efforts do not seem to have had any beneficial results, owing to the apathy of the Russian traders and agriculturists who have a low standard of comfort.

The Russian colonists in Semerechia did not give Mr. Jones a very favorable impression. He found them surrounded with every advantage of fertile land, plenty of water, wood, and building material that a colonist could desire, but yet the Russian *moujik* "remains the same shiftless, slovenly, unprogressive creature as before." Although he could build a house at a trifling cost he prefers to

Buttermilk as a Summer Drink.—Persons who are obliged to be out of doors during the intense heat of summer, and desire a nice, cooling, strengthening beverage will find nothing better than fresh buttermilk. It is better than the alcoholic drinks, beer, or cider, and for quenching thirst is preferable to lemonade, aside from the fact that the latter is an expensive drink to prepare, while the milk may be usually obtained for the asking. It is useful in fevers, and if it were not so cheap and easily obtainable would be used more freely than it is. It should not be taken in large quantities, but a little at a time, and that slowly. In every case when the body is heated by overexertion, or burning with fever, drink little and often. Buttermilk acts freely upon the secretive organs, stimulating the action of the kidneys and liver, and acts as a mild laxative, purifying the blood by removing through the channels, named, the effete and unhealthy secretions, and at the same time it is nourishing. When taking any drink to the field during the heat of summer, it should be kept as cool as possible without the aid of ice, and whether in a can, jug, or covered pail should be wrapped with

a wet cloth and kept in the shade. The contents will then always be found several degrees lower than the surrounding atmosphere. A wrapping of several thicknesses of moistened paper will produce the same results. One pail inside another is good.

EMPIRE STATE DAIRYING.

GEORGE E. NEWELL, NEW YORK.

One of the greatest defects of common dairies and common methods of caring for them is that the animals are so fed as to be fat in the fall and thin in the spring. At only two periods in the year, then, can it be said that such cows are in good physical condition for producing milk, and that is in midsummer and midwinter.

In the former case, in the flush of grass, a gradual restoration of strength and vigor follows the condition of being spring poor. Thus, for a brief period, a cow is naturally at her best for lacteal secretion. Then the rich autumn feed, aided by a gradual drying off of the milk-flow fattens the cow up again, until often, at the advent of cold weather, she is "as fat as a steer," and does not yield over a quart of milk at a milking. A steady diet of dry hay will tell on this storehouse of surplus flesh, so that by midwinter her physical condition is again normal for natural, easy milk production. But, as she has been dry for two months, no advantage can be taken of it, even though the dairyman was so disposed, and she runs down the physical scale until she is spring poor again. There is no proper blending of nitrogenous and carbonaceous food in her diet. An excess of carbonaceous elements in her food during autumn is contained in the sugar and starch of the cornstalks, pumpkins, fruits, etc., which form a large part of her food at that season of the year. Then comes a steady diet of nitrogenous food till spring, when a blending with it of oily rations should be made. The whole subject of keeping a cow on scant grass pasturage from May to November, and the rest of the year compelling her to subsist on dry hay, is antagonistic to profit in modern dairying. Despite this fact, this country is full of dairymen who are conducting the milk production business on such a basis.

Dairying is one of the most agreeable agricultural pursuits. Capable as it is of being made highly profitable to all who own milch cows, the principles of the most successful methods of procedure should be diffused through dairy communities. The Farmers' Institute work of the various States is not now extensive enough to do this, but it is waging a vigorous campaign for dairy and agricultural progress. The small towns and hamlets need institutes as well as the large ones, as it is largely the farming class who dwell in the vicinity of the former who would be the most benefited by the teachings of experts. The farmers of the Atlantic and Middle States cannot compete with their brethren of the West in the production of wheat, corn, pork, or beef, and every tiller of the soil looks to dairying for his means of livelihood. Is it meet, then, that so large a proportion of dairymen should struggle on in old ruts, bearing the burden of mortgaged farms, when it is easy to learn better ways? Last summer the crop of hay was light through this great dairy section. This is but another plain lesson to those dairymen who depend entirely on hay as a winter feed for cows. A dry season brings a short crop of grass, and without well filled silos and root cellars to fall back upon, or rather to be drawn on all winter in connection with hay, the stock actually suffers on short rations, or the farmers are put to great expense to buy more hay. With the practical value of the silo fully established, to say the least, it is a most short-sighted policy for intelligent dairymen to continue on without its use.

MY ORCHARD FENCE.

SARAH RODNEY.

An unsightly board structure, that for many years was a terrible eyesore, has finally undergone a decided change, at least for a part of the year, and no fence, ugly or otherwise, causes one such discomfort in the winter time, when Jack Frost has it under his care, as it does when one is out of doors, and in closer proximity.

First, I had a border, a trifle over two feet wide, spaded along the whole length of the fence. Into this I transplanted all kinds of rank-growing perennials, such as sweet rocket, phlox, valerian, old-fashioned feather flowers, both white and pink, and every sort of tall, luxuriant perennials, that would come up year after year and take care of themselves. In the spring I set out dahlia tubers—all that I do not know what else to do with—giant marigolds, sunflowers, and any other coarse, showy annuals that are a nuisance among the finer flowers, but show to good advantage in suitable localities. Then, I must not forget the hollyhocks. They also take care of themselves year after year, although they do not bloom the first year from the seed. Marshmallows make a grand show in late summer. As a background I have planted hardy climbers, alternating different kinds over each length of fence—bittersweet, wild clematis, Virginia creeper, and tea vine. They make a charming background for the flowers, and the whole forms one of the most attractive features on the farm.

HOW TO DEAL WITH ELDERS.

E. L. VINCENT, NEW YORK.

When I took possession of my farm it was, in places, thoroughly grown up with elders. They grew very rank, some of them higher than a man's head, and more than an inch through at the butt. For many years my predecessor had cut them down with a scythe or bush-hook, but they seemed only to grow ranker and thicker. I have adopted a new plan, and the only one, I believe, which will result in any permanent good. I had a man with a good strong team plow about two acres of this land, after first cutting down the bushes. This was in the fall. The next spring I plowed it again and followed the plow with horse and boat, and pulled up every root I could find. It was back-aching work, for some of the roots were six or eight feet in length. I had two piles, each more than ten feet high, of these roots. After these had had time to dry thoroughly I burned them, and that was the end of them. I intend to continue this process, taking up only what I can handle each year, until I exterminate these pests. It is, of course, hard work, but if any one has a better plan of getting rid of these bushes I would be glad to hear of it.

REMINDERS.

Two beeves can never be made fat on a pasture that has only grass enough for one.

To keep the poultry free from vermin, their quarters must be kept absolutely clean.

Do not expect to sell butter at top price to private customers, unless it is top quality.

The only way to grow heavier crops each year, is to make the land continually richer.

Few farmers are so situated that they can afford to keep a cow merely to raise her calf.

The best way to keep up with agricultural progress is to take a live agricultural journal.

To determine whether green-soiling really pays, let us suggest that you try it for yourself.

If tobacco is to be made a paying crop, it must be given the very best land on the farm.

You can never grade up your stock until you begin to use better animals for breeding.

The fastest way to make money in the dairy, is to keep always weeding out the poor cows.

The only way to free the farm from weeds, is to cut them always before they go to seed.

The best success with sheep is attained only by those who believe in both wool and mutton.

Stock that is continually tempted by weak fences, should not be blamed for becoming breachy.

Sweet potatoes cannot be kept through the winter, unless you handle them gently when harvesting.

The farm will never give you complete satisfaction so long as you have to buy fruit from your neighbor.

If the weeds have possession of the bed this fall, you can hardly expect a good strawberry crop next spring.

If the "first-class farmer" would maintain his rank, he must keep on studying and learning all the time.

If you expect the boy to love the farm, you must permit him to get some enjoyment from it as he goes along.

Something new must be planted every week, if we wish to maintain a good garden throughout the season.

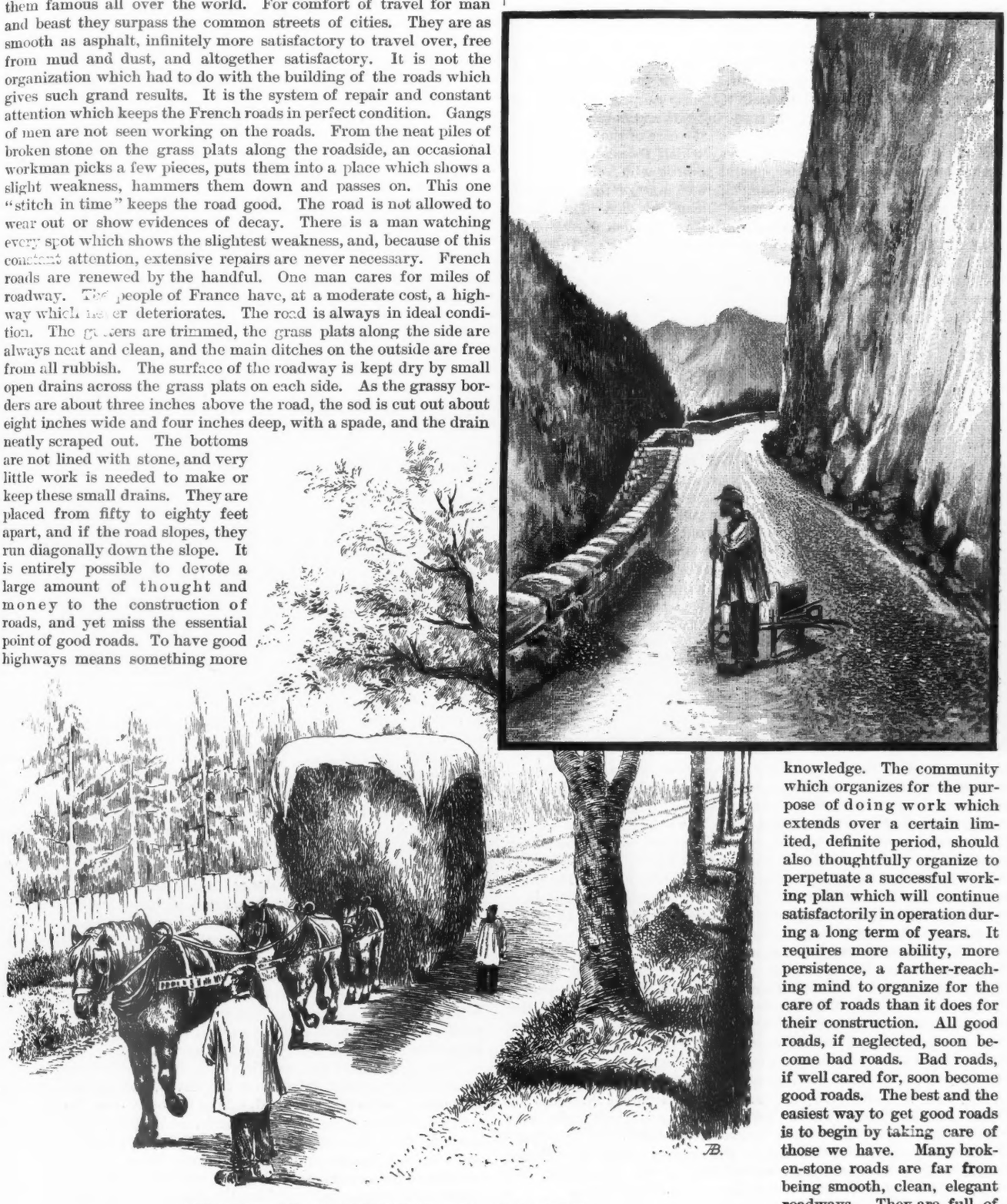
The wrong way to make money from hogs is by beginning to feed them only "when big enough to feed off."

You can never keep up with the work on the farm, if you ever put off until to-morrow what can be done to-day.

HOW FRANCE KEEPS THE ROADS GOOD.

LOUIS H. GIBSON, INDIANA.

The organization which cares for the French roads has made them famous all over the world. For comfort of travel for man and beast they surpass the common streets of cities. They are as smooth as asphalt, infinitely more satisfactory to travel over, free from mud and dust, and altogether satisfactory. It is not the organization which had to do with the building of the roads which gives such grand results. It is the system of repair and constant attention which keeps the French roads in perfect condition. Gangs of men are not seen working on the roads. From the neat piles of broken stone on the grass plats along the roadside, an occasional workman picks a few pieces, puts them into a place which shows a slight weakness, hammers them down and passes on. This one "stitch in time" keeps the road good. The road is not allowed to wear out or show evidences of decay. There is a man watching every spot which shows the slightest weakness, and, because of this constant attention, extensive repairs are never necessary. French roads are renewed by the handful. One man cares for miles of roadway. The people of France have, at a moderate cost, a highway which never deteriorates. The road is always in ideal condition. The gutters are trimmed, the grass plats along the side are always neat and clean, and the main ditches on the outside are free from all rubbish. The surface of the roadway is kept dry by small open drains across the grass plats on each side. As the grassy borders are about three inches above the road, the sod is cut out about eight inches wide and four inches deep, with a spade, and the drain neatly scraped out. The bottoms are not lined with stone, and very little work is needed to make or keep these small drains. They are placed from fifty to eighty feet apart, and if the road slopes, they run diagonally down the slope. It is entirely possible to devote a large amount of thought and money to the construction of roads, and yet miss the essential point of good roads. To have good highways means something more than to build them. It means a system of maintenance, a system for their care, which is far more complex, far more difficult of organization, than that which has to do with building them. The building of a road is an engineering problem, involving knowledge, specification and superintendence. These will build a good road, but the mind which builds has its application only during the process of letting the contract and attending to its execution. The everyday care of the road is far more important. Road construction is the work of a relatively short time. Road maintenance is an organization which must extend over all time. It is something more than knowledge. It means continuous vigilance as well as knowledge. The community which organizes for the purpose of doing work which extends over a certain limited, definite period, should also thoughtfully organize to perpetuate a successful working plan which will continue satisfactorily in operation during a long term of years. It requires more ability, more persistence, a farther-reaching mind to organize for the care of roads than it does for their construction. All good roads, if neglected, soon become bad roads. Bad roads, if well cared for, soon become good roads. The best and the easiest way to get good roads is to begin by taking care of those we have. Many broken-stone roads are far from being smooth, clean, elegant roadways. They are full of ruts, and many places are filled with mud and water. A little constant everyday care would make good roads again. The mud and water should be scraped out of the depressions, and the opening filled with broken stone and gravel. This should be rolled, or pugged according to the size of the depression. As other low spots make their appearance they should be treated in the same way. Slight but constant attention after rains would keep nearly all roads in most excellent condition.



VIEWS OF HIGHWAYS IN FRANCE.

There is no kind of road which will not depreciate if neglected, and there is none which cannot be brought to a state of excellence by diligent attention and constant, but slight, repairs.

The duties of the French roadman are, first, to keep the large and small drains clear, so that the water will run freely. Second, to scrape off the mud in wet weather and sweep off the dust in dry weather so that his section is always clean. Third, to clean off the snow as far as possible, to break up the ice on the surface of the roads and on the drains in the winter. Fourth, to pick up all loose stones, break them and pile them in regularly-shaped heaps on the side of the road ready for use in repairing ruts and holes. Fifth, to keep the mile posts in order. Sixth, to take care of the trees alongside the road. The amount of roadway which these men watch is altogether dependent upon the amount of work which they have to do. The roadmen live in the immediate vicinity of the road and are expected to be constantly at work during the day. They have the following tools, wheelbarrow, iron shovel, wooden shovel, pick, iron scraper, broom, rake, crowbar, hammer and tape. This system of caring for roads amounts to a constant, everyday patrol in search of the slightest evidence of imperfection. The result is that these imperfections are never observable to the ordinary traveler. He is soon led to expect perfection and sees nothing else. One can walk along these roads after a rain without getting his shoes muddy. In the dry summer time there is no annoyance from dust. All this is the result of constant, diligent, far-reaching organization. The economical and prudent French people know that it pays to build good roads, and that it pays still better to take good care of such highways.

CITY BUTTER-MAKING.

FANNIE CASSADAY DUNCAN, KENTUCKY.

My first experience in city butter making was with a dash churn. The cream was kept until it was old enough to be thick and coated on the surface. It was poured, untempered, into the churn, a cloth tied around the cover, to prevent the milk from slopping over, and the contest began. Spat and thump was the method, and the milk foamed over, defiling all it touched. Spat and thump, till my arms ached, and, in an evil moment, I poured hot water into the churn, to hurry up matters. In time the butter came—a pasty, colorless mess, unpalatable and unsightly. I often almost despaired, not only for myself, though that was bad enough, but for the chancellor of the exchequer, who had gone to such pains to set me up in the business, and who had looked forward anxiously for the results. "Never mind," said he, encouragingly, though really feeling no better than I did," we must study our subject better," and so we did.

I now gave Jersey butter my most serious attention. I found it fragrant, golden, of perfect grain, the aroma delicate but decided, the flavor nutty. It gave no hint of salt, no suggestion of buttermilk. Compared with what I had made, one would scarcely believe both were composed of the same materials. Our cow was certainly not at fault. She was a fine Jersey, well fed, well kept, and with never so much as a day's sickness during her town life. The milk certainly could not be blamed, for each day the man brought in a great pailful of creamy fluid, with the certainty of butter in every drop, and untainted in any respect.

The chancellor and I put our heads together. We found that, the milk being all right, the prime essentials in good butter-making are these: Rapid cooling of the milk, in order to separate the cream from it within twelve hours; a gradual return of the temperature of the cream to about 75° F. until it is ripe; we found that ripening cream should be aerated, and that ripened cream must be of just the right temperature when it is put into the churn. To reach these ends we sent for a creamery. It has deep cans, well ventilated, a space for blocks of ice, or cold water, as may be desired, faucets at the bottom of the can, whereby the milk may be drawn off, leaving the cream for the dairy, and an adjustable skimming tube, which can be put in from above, through the milk, thus drawing off the cream and leaving the skim milk. We gave up the old dash churn and bought a revolving churn.

The milker poured milk, warm from the cow, into the deep cans of the creamery. There was a rapid separation of the cream from the milk. thus saving time, insuring freshness for both, and obtaining a full per cent. of cream. We found the best temperature for milk, while inside the creamery, to be about 50°. Colder than that, the resulting butter does not keep so well; warmer than that, the cream globules do not rise so fast. We let our cream stand twenty-four hours to be sure it was all on top, after which time it was drawn off and put into one of the unglazed stone jars to ripen.

Nothing is of more importance in butter-making than the proper ripening of the cream. It used to be thought that ripe cream must be both sour and thick. Hence the cream was set in a warm place, and left undisturbed until it was thick and acid. Indeed, I have seen in some farmhouses cream, that was both sour and warm, poured, foaming, into the churn. Such is not at all fit for butter-making, and will bring only disappointment if used. Cream, when ripening, should be kept in a moderately cool place, be frequently stirred to let the air through it, never be allowed to become lumpy, and have a pleasant, acid taste when ready for churning. All this is needed to procure the fine flavor of excellent Jersey butter.

Really good butter-makers give their attention to butter flavor at each and every step. Only thus can the best be had, and only the best pays. As nothing more readily absorbs odors and gases than milk or cream, it is highly important to keep, not only the air, but all vessels used in connection with the dairy, free from all taint. When cream is ripening, if other cream is added, the whole should be thoroughly stirred to aerate and bring all to equal ripeness.

When a churning was ready, the churn was washed with hot water first, to cleanse, and then cold, to temper the churn. The ripened cream was put into the churn and tested by the thermometer. The temperature of cream ready for churning should be 60° in summer, and 61° in winter. We were in the heart of a big city, on a lot 50x200 feet, with buildings occupying the principal portion, including a hennery, and a stable for horse and cow. We had a splendid Scotch collie, that could do anything, almost, but speak. Watching the churn one morning before he went to his office, the chancellor concluded to turn the labor of churning over to the collie. He ordered a dog-power, and in an incredibly short time the collie was initiated as chief churner. He would come bounding in like a vigorous school boy, go cheerily into his box, and tread away, apparently as happy as any of us, and also seeming to comprehend how useful he was. When the glass indicator was clear, the dog was released, and was always rewarded with a pan of cool milk and much extra petting. The dog-power was removed and the ordinary crank put on the churn preparatory to the finishing touches. When the plate is clear the butter particles are about the size of wheat grains. Now is the time to loosen the cork and let out the buttermilk, retaining the butter in the churn by a simple contrivance like a perforated thimble. I drew off the buttermilk in a heavy tin bucket made for the purpose. I then poured over the butter, still in the churn, a pail of clear, cold water, letting it run through the butter and out of the churn, moving the churn backward and forward gently, repeating the process until every trace of milk was gone, and the water ran clear. Then I had ready a pail of filtered water salted with clean salt, and iced. This was poured into the churn.

The next step depended on what kind of butter was desired. If it was to be taken out of the churn in its granular form, this was the time to salt it. The brine was drained from the churn, having hardened the grains and liberated the buttermilk. With a wooden paddle the butter was carefully removed to a bowl, previously submerged in cold water, and all was covered with a cloth wet in cold brine. If moulded butter is desired, the filtered brine is poured in as before, the churn turned, brine and all, over and over, a few times, until the butter particles are thoroughly consolidated, the brine poured off, the churn rinsed with clear water, and then, with the paddle, the butter is lifted over to the butter-worker, where it is thoroughly worked, occasionally rolling it into thin sheets, over which water is poured, to remove the buttermilk. When the butter is taken out, the churn should at once be thoroughly washed, first with cold water, to disengage every particle of butter and milk, then with hot water, to search out all grease.

Salting is one of the essentials of good butter-making, since salt increases the density, brings out the flavor, and keeps the butter. One ounce to the pound is used, sifting it evenly over the flat-rolled surface, folding it double, pressing it, and salting again until all is used. Now the butter can be divided and pressed into a mold. Mine had my initials cut in it so as to print them on each cake, thus securing a trade-mark, for whatever surplus I had, and at certain seasons the surplus was considerable, found a ready market, at the highest price. Thus, cow-keeping and butter-making in a city are profitable, and within the reach of many people.

Smudges to Prevent Summer Frost.—In Canada and in the Northern United States, crops are often so injured by one early frost that they cannot grow during several weeks of the warm weather which follows. The crops may be saved by blanketing the field with a dense smoke on the cold, still nights in August. Wet straw or hay, with fresh weeds and grass make a good, heavy smudge.

A BEGINNER'S BARN.

S. HOLLISTER, CONNECTICUT.

Thousands begin farming for themselves every year on a few acres, increasing their area by purchase as they lay up money. Frequently the land has no buildings, and, after erecting a modest cottage, there is little left to build a barn or other shelter for stock and implements. It does not pay to leave these things to the mercy of the elements. Rude, unsightly structures detract from the appearance of a home, if not from its intrinsic value. By the properly directed expenditure of a like amount of money and muscle, a neat barn may be built, which, with additions as needed, will prove serviceable for years, until larger, better buildings can be afforded.

A beginner, with whom I am acquainted, built, with his own hands, a small barn on a sidehill, requiring only 2,000 feet of boards. The farming timbers were cut in the woods and hewed on one or more sides, as required. Some of the partitions, standards and joists are made of slabs bought at a neighboring sawmill at two dollars per cord. Fifty dollars covered the entire money cost of the completed building, although, of course, the labor was not estimated with the material. It is twenty feet square with ten-foot posts, and the roof projecting two feet on all sides gives it a comfortable, permanent appearance. The basement is for stabling, and the upper part for hay, wagons and tools. The hay is thrown in at the top doors, and the mower and wagons run in on board tracks at the open door. This passage is only six feet wide. The tracks

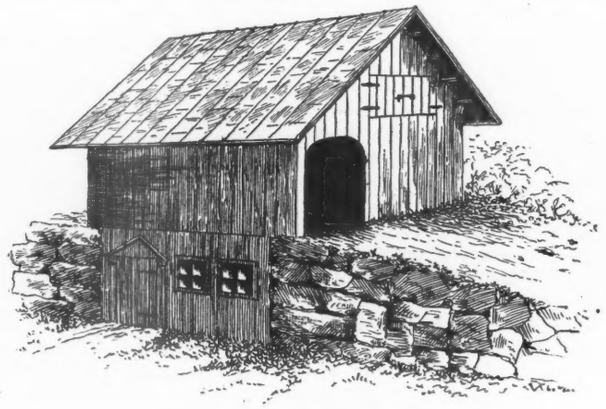


FIG. 1. AN INEXPENSIVE BARN.

guide the wheels so the hubs cannot strike the siding, and a vehicle may be run in on a dark night. If one preferred, the remainder of the upper floor could be used for stock, and the basement for poultry. It could be left an open shed until the owner was able to inclose it. From time to time, as he prospered, the building could be made longer, and the roof to the opposite side extended for a shed.

The owner avoided the expense of buying shingles by a gift of a quantity of second-hand tin. Instead of putting this on in common squatter style, entire, he unlocked each sheet, flattened it carefully on a block with a mallet and stopped every hole with putty made of sand and white lead in equal quantities. These were then put on in courses up and down the roof, making a series of shallow gutters that look neat. Anybody may do this in the following manner: Turn up the left side of each sheet at a right angle, making a wing an inch high. Serve the right side in the same way, only have it two inches high and turn back half of it to form an inverted V. After dipping these in crude petroleum the first course is begun at the right lower corner of the roof. Each sheet is lapped half an inch over the one below it and firmly held in place by two shingle nails driven, not at the sides or ends, but in the center of the sheet and two inches apart, the nail heads being puttied over. This gives the expansion and contraction of the metal no chance to cut off the nails nor make holes in the roof as it would do were they wide apart. No snow nor rain can enter, and it will last indefinitely, if kept painted or oiled with crude oil. This roof is recommended for all farm buildings.

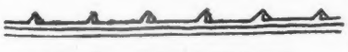


FIG. 2. SECTION OF ROOF.

Close behind the barn the stacks of hay and corn fodder are built out of sight from the house. When the provender in the barn is exhausted, a stack is opened and entirely pitched under cover, so no part of it is damaged by storms. If a stack should be too large to admit of this, the portion left out is fed first. [A perspective view of this barn is seen in Fig. 1, and a cross section of the finished roof is shown in Fig. 2.]

IMPROVED MACHINE FOR PASTEURIZING MILK.

PROF. H. W. CONN, WESLEYAN UNIVERSITY.

There are several machines in use for pasteurizing milk which differ in their details, but the one which, all things considered, is probably the best, was invented and used by Herr H. Bitter. It consists of a copper tank *a*, shown in the engraving, Fig. 1, holding about fifty quarts, or a little more, and fitted with a copper cover *b*, arranged, for convenience, to be fitted to the tank by a bayonet joint at *c*. Inside of this tank runs a coil of pipe from a steam boiler, as follows: The pipe is about three-quarters of an inch in diameter, and passes through the cover at *d*, and then goes to the bottom of the tank, making about a dozen turns around it on the way, *e*. It then passes into a smaller coil *f*, inside of the first which, after passing to the top of the tank, enters into a third inner coil *g*, Fig. 2, and this, passing to the bottom, has an outlet at *h*. The whole surface of the steam tube should be about fifteen square feet. At the bottom of the outer coil *j* there is an outlet, provided

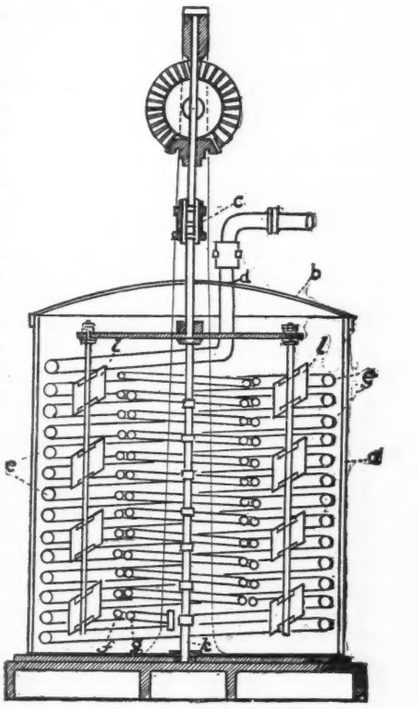


FIG. 1. SECTION OF BITTER'S PASTEURIZING APPARATUS.

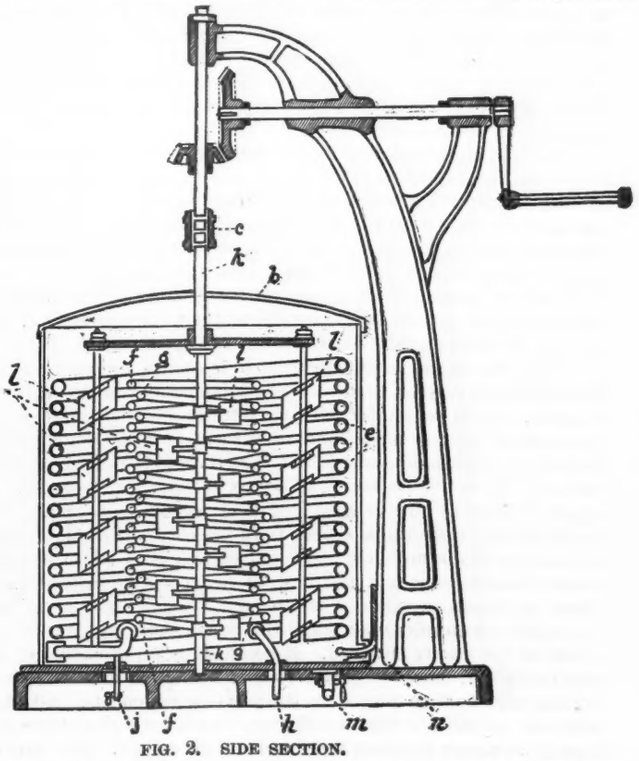


FIG. 2. SIDE SECTION.

with a stop cock, to permit the removal of the water of condensation. The water of condensation from the inner coil passes off at

the outlet at *h*, which must be always open, to prevent too great pressure, and, therefore, has no stop cock. Running through the center of the tank is an axis, *k*, which can be revolved by means of the crank shown in Fig. 2, and bearing several sets of paddles, *l*. At *m* there is a cock for the outlet of the milk, so arranged that the entrance to the cock is on a level with the bottom of the tank. A thermometer for determining the temperature of the milk in the interior is placed at *n*.

The apparatus is used as follows: The milk is placed in the tank from the top, filling the tank, if desired. The cover is then replaced upon the tank, and steam is turned on through the entrance pipe, *d*. As soon as the steam enters, the crank is turned, which sets the paddles into revolution. This keeps the milk in constant agitation, and insures the thorough and uniform heating of the whole mass from top to bottom. The first steam that enters is likely to be condensed by the cold milk, and the water of condensation is removed from the stop cock, *j*. If any is condensed in the inner coils, it passes out the outlet at *h*. The steam is allowed to run through the coil until the temperature reaches about 68° Centigrade (about 157° Fahrenheit). Then the steam is turned off, and, after a few moments more agitation, the milk is allowed to stand for ten or fifteen minutes. The temperature rises one or two degrees more, and then becomes stationary. After fifteen minutes the milk is drawn off at the stop cock, *n*, and the operation is completed so far as the pasteurizing itself is concerned.

Such milk by experiment has been found to be unaltered in its character as to taste, odor and ease of separation of the cream, and at the same time to have acquired considerably greater keeping properties. The number of bacteria in it is immensely reduced, although the milk is not sterilized, and will, after, a time, undergo some fermentative change, although it will not sour. In order to make this process of much value, however, it is necessary to follow the pasteurizing with a subsequent cooling of the milk to as low a temperature as possible. This may be done by any of the processes of milk cooling which are known. If a good supply of cold water is at hand, there is no reason why it could not be run directly into the coil of pipe in the place of the steam, and the milk be set in motion once more. The milk could then be cooled by the same machine used in pasteurizing. The inventor of the apparatus did not use the apparatus for this purpose, however, but it would seem to be feasible and exceptionally convenient where an abundance of cold water is at hand. Unless the water is quite cold, however, the cooling will be slow. If this method is not adopted, the milk must be cooled in some other way, by ice, or by aeration in cold air or by surrounding with cold water in order to make the pasteurizing thoroughly effective. The lower the temperature, of course, the better the results. When this is done, the milk thus treated is very much superior in its keeping properties to normal milk, and the danger of disease from its use is very greatly diminished, though probably not altogether removed.

The apparatus thus described is the most recent of the forms of the pasteurizing machines that have been invented. It was made at first simply for laboratory experimenting and has as yet not been used to any extent for the supply of the markets. The results obtained from the apparatus, however, seem to be far superior to those obtained by any other devices, although this has as yet not been put to much practical use. It would probably be found in practice that a number of the details might be improved, but this can only be determined by direct use of the apparatus.

With the use of this apparatus it is almost necessary, if the best results are desired, to sterilize also all the milk vessels. Milk, for instance, should be put for delivery into glass cans which can be sterilized by heat, or into some other form of vessel which can be heated to a high temperature, and thus thoroughly deprived of all bacteria. It is not necessary to try to exclude air, however. Of course without the use of sterilized milk vessels, pasteurizing is of comparatively little value, for the milk vessels are the chief sources of bacteria in the milk from the outset, and it is of no practical value to destroy them if the milk is to be put immediately into other uncleaned vessels. With the use of sterilized, or at least thoroughly clean milk vessels and this pasteurizing apparatus, very excellent results are obtained. If common milk, even that of several hours old, be subjected to this pasteuriztion and subsequent cooling, and be then placed in sterile vessels it can be distributed with the confidence that it will keep sweet for two or three days even in summer weather, though not kept on ice. The superior keeping quality and superior healthful properties will compensate the milk dealer for his trouble in using the machine, and the customer for the slight advance in price necessary. The inventor of the machine estimates the expense of pasteurizing with his machine at about one cent per quart. This would be slightly increased by the subsequent cooling of the milk which was not included in his estimate.

PEACH-GROWING IN THE DELAWARE PENINSULA.

CHARLES WRIGHT, DELAWARE.

There was evidently some money made, last season, on peaches, but the old game of "hunt the thimble" will have to be played, and that, too, on scientific principles, before we can tell exactly where it is. Certainly the railroad made money; then, too, the commission man has had a slice, and a very generous one. The manufacturer of peach baskets has certainly renewed his bank account. Packages, to ship and handle fruit in, must be bought, and, with the immense demand of last season, the basket-makers found no trouble to sell all they could make, and many orders had to be refused.

Where was the "agent," or "three-per-cent. man," as he is familiarly known? He was around, inducing peach-growers who do not keep up with the procession to ship their fruit and let him have three per cent. for putting tags on the baskets, and making out manifests for the same, nor was this all; it is a settled fact that the large majority of the agents have shipped peaches in carload lots, and charged the shipper the same freight rate as on a single basket. In other words, a car, holding, at the railroad company's estimate, about 550 baskets, was often loaded with seven, and even eight, hundred baskets instead, the agent pocketing the difference in freight himself.

In spite of all adverse conditions, some of our growers made a little money from their peaches, though not as much as they would have done if we could have had fair weather and better business methods. As the trade is now conducted, a set of men form syndicates around our largest shipping points, and have their own way. They control all the fruit that comes there, making plenty of money, but often not leaving much on the grower's hands. Had our growers heeded the advice of the Delaware Fruit Exchange, and given it their entire support, better prices would have been the rule. When you sell your peaches at home and put the money in your pocket, you know just what is being done; when you trust them to a commission man in a far-off city, you do not, and you take only what he sees fit to send you. To sum up, the growers who sold their peaches to buyers at the stations, or to canning factories, got fair prices, and, considering the immense crop the trees bore, they paid well. Our growers need to prune their trees, grow only the best fruit obtainable, to put it in the very finest condition, and to look up, as far as possible, individual markets. Good fruit will always bring an extra price, even though the market be crowded. I sold Elberta peaches, last year, for $1.25 per basket, in New York market, when good Crawfords brought only eighty cents.

The newspaper reporters would have us believe that the "yellows" had so devastated the peach orchards of Delaware and Maryland that the business was done, and no healthy trees left. How, then, if this is the case, did this peninsula ship over 3,000,000 baskets of peaches by railroad alone, besides what were canned at home or shipped by water? And this, too, when there was scarcely a carload sent from Lower Kent and Sussex counties, Delaware, Wicomico, Worcester, and Dorchester counties, Maryland, all large peach-producing sections, and all free from "yellows," so far. The trees in all of these counties are as healthy, vigorous, and long lived as anywhere in the United States, not a sign of disease or a premature peach ever seen here. With a strict enforcement of the "yellows" law in all diseased sections to the north, and a prompt eradication of all diseased trees, we feel sure of preventing the disease from reaching us for some years to come, if not entirely. The prospect for the Peninsula grower is as bright as it ever has been, and such a superabundance of all kinds of fruit may not come again for years.

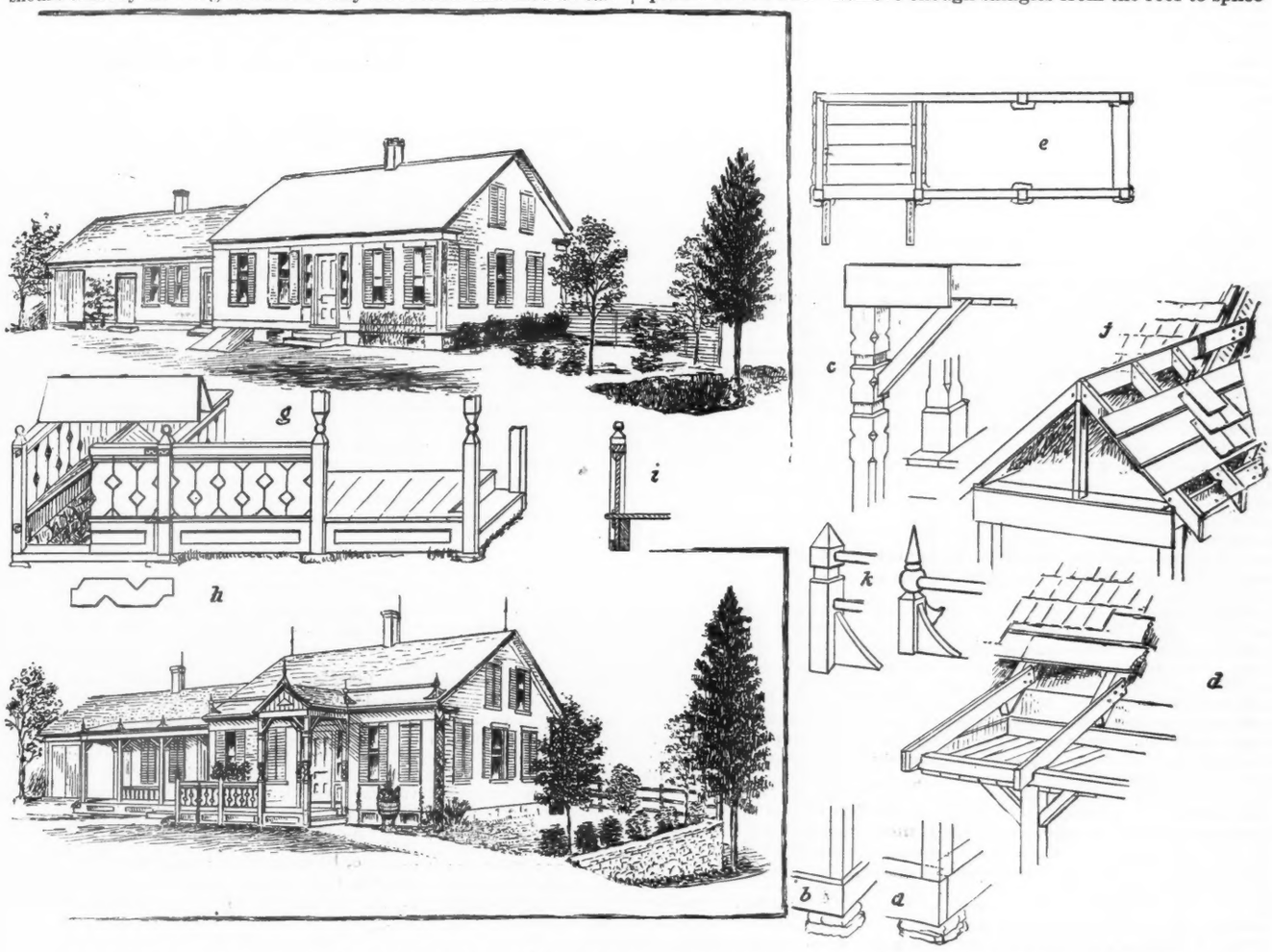
Shade Trees in the Pasture.—If possible, every field used for pasture should have a shade tree in it. The trees may produce fruits and nuts as well as shade. At the proper season plant two or three trees in the field and build a permanent fence about them. Fertilize and cultivate well. The fence can be removed in a few years. If intended for horse pasture the lower limbs should not be less than eight feet from the ground. Never put barbed wire near a shade tree frequented by stock. The animal droppings about these trees cause them to grow far more vigorously than those not thus visited. Cut the top back every two or three years, to make the tree spreading. The shade will not greatly retard the crops growing near.

HOW TO BEAUTIFY A PLAIN HOUSE.

DARWIN COMINGS.

On many country homesteads the outlay for the house has had to be limited to the cost of comfortable requirements, and ofttimes to the absolute necessities of the family. The old log cabin was no more a proof of this than the wooden, "square rigged," frame house, with its pent-up plainness, shorn of all semblance of decoration, even the chimney giving an idea of scant proportions.

As successful crops yield their golden increase, the barns increase in proportion to the needs, the fields broaden into the forest land, the herds multiply, the fences lengthen, the house is shingled and painted, and perhaps the necessities of family and help are met by thrusting out a second growth of the old domicile. Children reared by such a fireside cannot help drawing comparisons between more attractive homes and this old homestead, which should embody all the grace and beauty that father and mother can afford. Usually the surroundings are, by nature, those which will best harmonize with every effort at improvement. A tasteful house, surrounded with the grace and freshness of an ever changing landscape, is a beautiful picture. A few touches of improvement will make these plain houses far more attractive.



PERSPECTIVE VIEWS OF THE OLD AND THE MODERNIZED COUNTRY HOUSE.

The cottage shown in the upper view of the illustrations has a very low appearance, the length being too great for the height. The horizontal lines of the building are too prominent, and should be broken by ornaments, which will bring out the perpendicular lines. A veranda or porch would make the great improvement shown in the lower view.

To improve the plain house, begin at the rear to grade up with stone and gravel, or build a plank approach to the driveway. Mark out a veranda the width of the space at the angle where the parts of the house join. Dig a trench to the frost line and lay stone foundations or piers under each post, front and rear, being careful to space them accurately. The floor timbers may be framed of light, square timber or heavy plank. The ends and side pieces may be joined at the corner so as to support the post above, as seen at *a*, or, being made of plank, may inclose the posts along the front, each running down and resting on the stone work, as shown at *b*. The pillars may be of five-inch-square timber, or may be made of inch boards, four to six inches wide, boxed together, and may be planed and left without any decoration, or may be turned or carved in some pattern for a part of the length.

An ornament like that shown at *c* can be made with a saw, chisel, and draw-shave. Measure the posts carefully, to have the scantling, running across the top, level with the plate which supports the rafters of the smaller house. Cut the posts the proper length, lay them alongside of each other, and mark out the ornaments so that all will be alike when completed. Securely fasten the frame and level it on the stone work, fastening the back joist to the sill. Erect the posts, placing a light scantling frame at the top similar to the one at the bottom, making sure that the pillars are plumb and in line. Remove enough shingles from the roof to splice the rafters together, as shown in the framing at *d*. Cover with common roof boards and shingles. The floor should slope gently outward. Board the ceiling with narrow boards, finish the base in panels to suit your taste, and make the jet to compare with the ell cornice. The whole should be painted as soon as possible, to protect against the weather.

The front porch framing is shown at *e* and *f*, with an extension running out to cover, and include, the awkward bulkhead at the corner. The latter is covered with three broad boards, the rear one being nailed down as a shelf for plants, while the other two fold up with hinges, as shown at *g*. The pattern and construction of the rail are shown at *h* and *i*. These additions help very much to break up the length of the buildings. Light, finial points on the veranda and porch, and a light rail, *k*, above the eaves of the house, increase the apparent height, which is strengthened by topping out the chimneys. At the front of the house repair the wall carefully, grade the yard, and remove the shrubs from the house to the wall. The vines should be massed on tall trellises at the corners, not along the base.

HOUSEHOLD

A Housekeeper's Complaint.

S. JENNIE SMITH.

Clare had looked for her all over the house, and at last found her, on hands and knees, in the parlor, vigorously scraping the carpet.

"What's the matter, Kate?" she asked, laughingly, "doing penance?"

"I should like to make somebody do penance," was the answer, as Kate proceeded to stand erect. "But this is not a very cordial greeting, and I am very glad to see you, in spite of my disgusted air. You see, Mrs. Jones has been here again with her candy-eating baby, and she lets it run all over the room. It drops the candy on the floor, and then treads on it. I just hate to see her coming, for she always has the baby, and the baby never travels without a stick of candy. Why, I was in a perfect fidget this morning about those pretty satin chairs, but Mrs. Jones was as serene as could be all the time that sticky child was playing around my new furniture."

"Why didn't you make it sit down?"

"Oh, I couldn't have done that for the world. Mrs. Jones would have been mortally offended. Nobody would dare to interfere with her baby. You know, Clare, Mrs. Jones, in some respects, is a very excellent woman, and how she can be so unconcerned about the destruction of other people's property, I cannot understand. One day she let the baby run around and interfere with my things until it broke a little china cup that I prized very highly. Of course she offered to get me one, but I didn't care about another; I wanted that cup. It had belonged to my little girl that I lost. It seems to me some visitors might make themselves less of a nuisance, anyhow. I read so much advice in regard to our treatment of them, I should like to see an article on how they ought to act. You know there are distant relations who come here every summer to stay a week, and after they are gone I have to take half a day to get the bookcase and closet in order. They drag out all the books, carry the periodicals upstairs, downstairs, outside, or anywhere, and never think of putting one of them back in its place. If they were near relations I should be inclined to give them a piece of my mind, but one does not feel sufficiently familiar with third cousins to do anything of that sort. Here's another instance: The other day we gave the sitting-room a thoroughly good cleaning, put down new carpet and oilcloth, and brightened things up generally. Just as we had finished, in walked John Lakewood with muddy shoes, and of course he made a mark wherever he stepped. Then he took a seat right near the edge of our new oilcloth, and kept pushing his chair against it. We were in constant fear that the edges would be broken. Lastly, he sharpened his lead pencil right over our pretty new rug. You know it is light, and we never have been able to get the lead marks out of it. Say, Clare, won't you benefit suffering humanity by giving the careless visitor some advice in your next article?"

How to Drink Milk.

D. WEBB.

It seems specially unfortunate that so many people are debarred from using what is so nearly a perfect food. There are thousands and thousands of people who enjoy milk, and who need just the nourishment that it contains, but who dare not drink it because of the unpleasant consequences that invariably follow its continued use, which usually take the form of headaches, and a bilious condition. The stomach of a perfectly well person ought to be able to digest this natural food without trouble, and it may be just here that the trouble lies. There may be some derangement of the digestive organs that a physician could set right, after which milk could perhaps be taken with comfortable and beneficial results.

There are some simple hints that can be given, however, a careful following of which may enable many to take milk who cannot now do so. In the first place it is to be remembered that the digestive fluids of the stomach are somewhat acid in their nature, and cause milk to curdle, when it comes in contact with them. When milk is drank quickly, the result is that it is curdled in large masses, which are difficult of digestion, frequently causing headache and having a tendency toward biliousness. There are three ways of obviating this trouble, at least in part. If milk is slowly sipped, it enters the stomach in small quantities at a time, which prevents large masses of a cheese-like consistency from being formed. Another plan that is frequently recommended is to add a little lime water to neutralize the acidity of the stomach, but a still better plan, in many respects, is to roll crackers, or dry toasted bread, to a powder and add one or two tablespoonfuls to a glass of milk before taking, varying the amount as experience shows the necessity. This powder of crackers, or of bread, being well mixed with the milk, makes the curdled portion in the stomach so light and porous that the gastric juice can readily and quickly permeate and act upon the whole of it. This plan, in connection with that of slowly drinking the milk ought to enable a great many to use this food who cannot now do so. Quite a quantity of the rolled crackers, or toasted bread, can be prepared at one time and placed in a closed jar, where it should keep for a long time, being perfectly dry.

Inexpensive Furnishing.

ALICE CHITTENDEN.

A young friend of mine, who has just gone to housekeeping, has furnished one of her rooms so daintily, and at the same time so inexpensively, that I am sure many lady readers of the AMERICAN AGRICULTURIST will be pleased to have it described. It is a very large room, and is used both as sleeping and day sitting room. The walls, like those of most country houses, are of kalsomine, but these particular walls are tinted a faint robin's egg blue, which serves as an admirable background for the etchings and simple sketches with which they are hung. The floor is covered with matting with a cream ground, showing here and there irregular dashes of dull blue and dull red. A very good quality costs only ten dollars for a roll of forty yards, but even this left a bare spot under the bed which is painted with yellow paint of the same shade as the matting.

An iron bedstead cost six dollars. This is painted with white enamel paint, leaving the brass knobs untouched. The two capacious closets, one of which was furnished with drawers underneath the lower shelves, made a bureau unnecessary. A small pine table is placed between the two front windows for a dressing table. It is draped with cream batiste (a sort of cheese cloth) with a great tiger lily design in dull blue. This cost twelve cents a yard. Small brass screw eyes are screwed in around the edge of the table, a brass wire run through them, and the curtains shirred on, falling just to the floor. They are lined with blue cambric. An old white homespun linen sheet furnished two covers for the top. A design of tiger lily is worked in the corners with blue rope linen thread, and a fringe of the same knotted in the hem. This is made by taking several strands six inches long, doubling them, and with a crochet hook pulling them through the fabric and then through the loop. These covers wash nicely and can be changed every week. A canopy is formed by fastening a brass pole to the wall several feet above the table, and over this fall curtains of the batiste lined with the cambric. A pincushion covered with a finer quality of white linen worked with blue wash silk, a glove and handkerchief case also of white linen embroidered to match, a brush and comb box, toilet bottles, and other accessories of the toilet, are placed on top of the table. Above it is hung a mirror, whose shabby old frame, first padded with cotton, is covered with soft folds of blue China crèpe with splashes of gilt. It is only an imitation of the real crèpe and costs fifteen cents a yard.

The washstand is the cheapest kind of an old-fashioned affair, purchased second-hand, but after Mollie had scraped off the old varnish and given it two coats of white China gloss paint it was as dainty an article as any one could wish. Two large wooden rings of light wood tied with blue ribbons and suspended from a nail above and at the right of the stand serve as a towel rack. The china is white and blue. A tall screen made of a clothes horse, draped with full curtains of the same material as the dressing table, and lined with cambric, stands in front and makes quite a cosy little private dressing room.

Curtains of white scrim are looped back from the windows with blue ribbons. The bed is draped with blue. The material is a sort of seersucker, which cost four cents a yard. It is the color of the light side of denim or blue jean, but much lighter as well as cheaper. Great conventionalized tiger lilies are worked at intervals over its surface, with heavy white linen thread. The name for this thread at the art stores is Bagarren floss. This spread is trimmed all around with a fall of heavy white antique lace about six inches wide, which cost fifteen cents a yard. It is as easy to wash as a sheet, and will remain clean a long time. It is basted on an old sheet to give it body, and, in working the pattern, the stitches are caught through enough to hold it in place.

The pillows are removed during the day, and a round bolster stuffed with excelsior and covered with the material like the spread is substituted. The divan is nothing more than a dollar cot covered with two comfortables folded and tacked into the shape of a mattress. A rug made of strips of silk and velvet sewed "hit or miss" as for rag carpet and woven in the same way is thrown over it. The pillows are covered with the blue seersucker and embroidered to match the bed spread. The whole effect is pleasing and artistic, and the general air one of comfort.

Care of Canary Birds.

MARION SEABROOK.

In order to secure health and comfort to your birds, their cages must be kept scrupulously clean. Brass cages are best, and can be kept bright by washing with cold water once a week, wiping dry, wire by wire, with a linen cloth. Never put hot water on the cage. Painted cages are bad for birds, as the paint is sure to be picked off and will slowly poison the bird. Sand is better than paper for cages. Use clean river sand and put it half an inch thick on the tray. They require the sand to facilitate digestion. Sea sand must never be used.

Water for bathing should be regularly supplied every morning, at as nearly the same hour as possible. Allow the bath tub to remain only long enough for the birds to wash very soon. They will learn to use it immediately, and thereby save much trouble. Never leave the bathing dish in the cage, for the birds drink from it and soon become sick. If you have a large cage, you will have less music, for the canary will be taken up with the amusement of hopping about and forget his song. Canaries come from a warm climate, and the cage should be kept in a warm place. A temperature of some sixty degrees is about right. They should have fresh air, but a draft is fatal to voice and health. Most bird ailments originate in a cold. Birds need good air as much as good food, and often suffer exceedingly for want of it, especially in the cold season when they are kept shut up in a close, unventilated room. They are usually hung too near the top of the room for comfort. The heat and bad air rise and cause them much suffering. Probably more birds suffer and die from want of fresh, pure air than from any other cause. The cage should hang where the sun can lie in it a part of the day, but a bird should never be exposed to the direct rays of the sun with no chance of shelter. The cage should be suspended by a spring, as it lessens the shock as they jump from perch to perch. A tree twig bends with the bird.

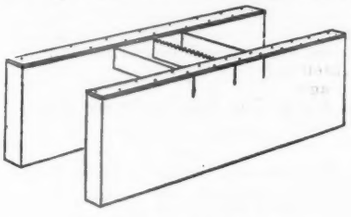
Food for canaries should consist of plenty of seed at all times, and attention must be paid to this, because, from the construction of some cages it would not be possible for the bird to empty the seed cup, and it might starve, with food in sight, but out of reach. Canary seed should be given constantly, and occasionally a mixture of rape, millet and (very sparingly) hemp. A hard-boiled egg and also a mixture of the boiled egg and grated cracker, a bit of apple or baked potato may be given without injury. The green food given must be of the most delicate nature, the tender inside leaves of celery, cabbage or lettuce. Sugar, sweets or cake should not be given to birds. If it does no greater harm, it causes a disrelish for their natural food. Anything sticky or pasty they cannot digest. Cuttle bone should be kept in the cage at all times. A red pepper hung in the cage

is not only strengthening, but improves the color of the feathers. The seed of the common plantain is a pleasant addition to the ordinary diet, and it is a good plan to save a quantity to mix with the other seed for winter use.

When the bird is moulting, keep a rusty nail in the drinking water. The iron is needed to supply the loss of vitality occasioned by moulting, and may be used at other times with advantage, if the birds are not as vigorous and active as usual. It is well to keep a bag of sulphur hanging in the cage. It is best above the swing where the birds jar it and so get some particles circulating through the cage. Lice seldom make their appearance where the birds are kept in a cleanly condition. If your pets are well and free from disease, it is a comparatively easy matter to keep them so. Make yourself acquainted with their wants and needs, and then supply them in as natural a manner as possible.

Corn Grater.

This simple contrivance can be made by any one who is handy with tools. Two pieces of hard wood, three-quarters to one inch thick, four to five inches wide and ten inches long, are planed smooth on faces and edges. An old saw blade, four to five inches long and about an inch wide, is filed sharp and the set taken out. Insert this in a center slit sawed on the edges of the two pieces having the saw edge come just even with the edge of the pieces. Two other pieces of the saw, or of iron, plain on the edges, are inserted in slits on each side. The middle or saw piece cuts the grains and the two plain pieces scrape out the meat. Strips are tacked on the edges to keep the



A CHEAP CORN-GRATER.

blades from coming out, and if these blades are forced into the slits they will hold the frame together.

Something New in Lamp Shades.

F. P. SCRIBBLER.

This design for a lamp shade will be welcome to those who enjoy doing nice, neat fancy work, but who have no knowledge of painting or embroidery. Select a piece of cardinal red curtain material—the thin, glossy, rather stiff kind of which window shades are often made—not the opaque variety. Cut from it a curved piece—shaped like a broad collar—which should be as wide as the required depth of the shade, including the fringe at both edges, and a little longer around the outside edge than the circumference of the finished shade. Slash the edges into fringe two inches deep, each strand of which should be less than a quarter of an inch wide, and crimp the fringe with the fingers into a light fluffy border. Dot the shade all over with irregularly scattered splashes of gold paint applied with a small brush. Ruby's liquid gold, rather thin, produces a rich and beautiful

A PRETTY LAMP SHADE.

effect. Crease the shade in regular folds from edge to edge, pressing them to insure permanence, lap one end of the shade over the other and fasten with three bows of cardinal satin ribbon. Thread a piece of the same ribbon into a long-eyed needle, run it through each creased fold close up to the top, draw up until the top is of the required size, fasten the ends, and arrange the crimped fringe to fall lightly over the gathering. Such shades, while quite inexpensive, give a very cheerful effect in a room at all times, especially when the lamp is lighted and its rays shed a red, rosy glow through the room.

Wild Rose Design.

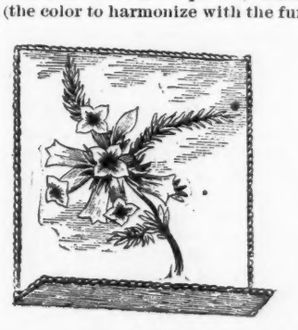
The accompanying design of wild roses is suitable for decorating a mantel lambrequin, table scarf, sofa rug, or pincushion. It would look well

WILD ROSES.

on velvet, or plush, painted with oil colors, or on satin with water colors. The petals of the roses should be of a delicate rose pink, the leaves of shaded greens, and the stems of two shades of brown. This design would also look well embroidered in crewels or floss.

A Convenient Music Rest.

Many pianos have music rests in which the sheets get caught and torn when turned; others have no support for the back of the music, and it bends and breaks when not bound. The accompanying engraving illustrates a very pretty and convenient homemade rest. The materials required are two pieces of pine board a quarter of an inch thick, one 14 inches square; the other of the same length and two inches wide; enough butcher's linen to cover both pieces; some floss and cord (the color to harmonize with the furnish-



MUSIC REST.

ing of the room). Work some design on the linen—a Kate Greenaway girl or a spray of flowers—and cover the large board with it. Also cover the slat, tack neatly and firmly, at a right angle, the large board to the edge of the narrow one, and edge the whole with the cord. This may be left on the piano rack, as it is ornamental as well as useful.

About Rugs.

PALMETTA MONTCLAIR.

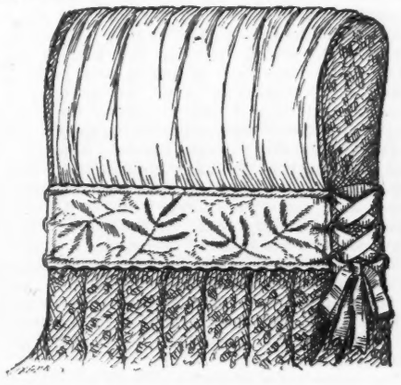
Rugs have superseded carpets in many households, and always with a decided gain in cleanliness and in the health of the inmates. Still there are disadvantages in rugs. As commonly laid they are just so many pitfalls to the tender, toddling feet of the little ones. They get askew, they turn up at the edges and commit all sorts of misdemeanors. The remedy for this is to have the carpet layer sink sockets in the floor and fasten the corners to them in such a manner as to be invisible. If there is any question of changing them to various parts of the room, you can fasten them yourself with four of the large drugget tacks, which have flat heads and are easily pried up. Heavy, oriental rugs, of small and medium sizes, will need no fastenings, but rugs made from carpeting are often very troublesome. These should be shrunk to the floor. Have both rug and floor free from dust, and as clean as possible, stretch the rug, and tack it securely to the floor. Now dampen thoroughly, and allow it to dry on the floor.

To clean rugs, if you have a lawn, lay them on it face down and beat with long slender switches; now turn over and sweep with long regular strokes the way of the nap. Never sweep it the opposite way. Then go over it again with a broom slightly dampened in water. A tablespoonful of pearline dissolved in a pailful of water will aid in brightening them. Either dip the broom in this, or wipe them with a cloth wrung out of it. Keep a broom especially for your rugs, and never use it on worn carpets, or dirty kitchen floors. Never shake a rug by one end. It loosens the warp.

Novel Tidy—The "Never Slip."

JEWEL ALSTEAD.

This new style of chair protector, or tidy, will instantly commend itself to those who hold in aversion the frail "fans, throws, bows and things" with which so many chairs are nowadays hampered. While it may be as useful and decorative as one chooses to make it, its name, the "never slip," indicates its most attractive peculiarity. To make one like the model, hem both ends of a



A STATIONARY TIDY.

yard of yellow surah silk and gather each side on a thread just the length of the width of the chair back; to each gathered side sew an embroidered six-inch band of fine white or ecru art canvass; to both ends of each band sew three silk-covered rings, and through these rings lace yellow ribbons from front to back, as represented, and tie in bows at each side.

Sometimes, midway between the bands, the silk is shirred across, two or three times, to hold it where it goes over the top of the chair back; but it is oftener left to form soft folds, being secured only by a tidy pin at each upper corner.

The design is pretty for any suitable material, especially for plain or figured wash silks, or linens. Cords and fancy tassels might be used for the lacing, if one preferred them to ribbons.

Two Wren Houses.

GERTRUDE CRENSHAW.

A neat wren house to be hung in the porch may be made of a wooden collar box, and the tough lichen which grows on stone. (Fig. 1.) A doorway is cut in one side of the box and a twig fastened below it for the "doorstep." Cover the box entirely with lichen, putting it on neatly with small tacks. Hang up by a hole in the back. Another pretty house is simply a cocoanut shell. (Fig. 2.) Saw off as little as possible of one end of the nut,

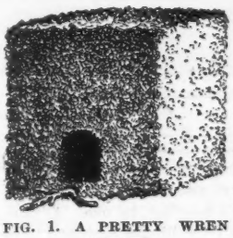


FIG. 1. A PRETTY WREN HOUSE.

to remove the meat; in the other end cut a square or oval hole; fasten the shell to a many-pronged branch of honey-locust, or any other wood which bends easily around the cocoanut. The sawed-off end of the branch is nailed against a tree or wall.

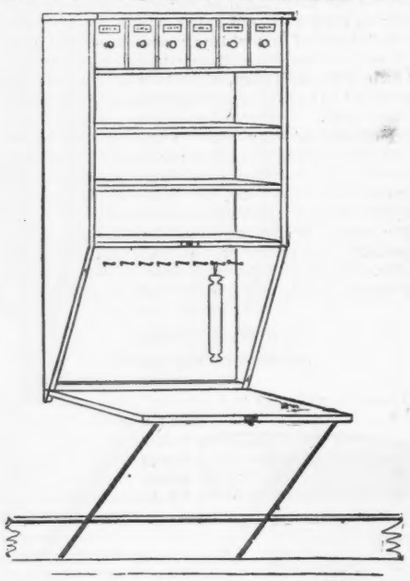
A Useful Kitchen Cabinet.

The accompaning illustration represents a cabinet which most housekeepers will find extremely convenient, especially in ill-arranged kitchens where its use will save a good many steps during the day. It is a sort of combination cupboard and table, fitted against the wall of the kitchen, and is out of the way when the table part is closed up against the lower part of the case, as it takes so little space that it does not interfere with anything in the room. Where there are large and conveniently-arranged pantries it will not be needed, but the average pantry is so small that in most houses something of this kind will be highly appreciated. The one from which the design is drawn has a row of little drawers at the top, in which spices, raisins, baking-powders, and the like, are kept. Thus the housekeeper has these things always at hand when she wants them, for they are never put away in the wrong place as they often are in the most convenient pantry. The shelves are occupied by cake-pans, pie-plates and pudding dishes, and the various other articles used in cooking, while from hooks just under the lower shelf, hang the rolling-pin, grater, big spoons, and the like, which every woman has daily need of.

FIG. 2. COCOANUT WREN HOUSE.

In the kitchen where the original of this "cabinet" is in use, a shelf at one side holds tin cans of sugar, salt, and such things, while a flour-box stands conveniently near. "I have found it a great convenience to have everything I want to use in cooking all in one place," the housekeeper tells me. It saves a good deal of time, work, and no end of annoyance, for when I want this or that thing I know right where to find it. It has saved me many steps, and I wouldn't like to think of getting along without it."

The construction of such a cabinet is so simple that a little study of the illustration given herewith will enable any person to make one. The table is made to fold up against the sloping part of the



HOMEMADE CUPBOARD AND TABLE.

front of the cupboard, when not in use. At the back it swings, or drops, from hinges fastened to a strip on the wall. It is fitted with a cupboard-catch, which shapes into a piece fastened to the bottom of the lower shelf, and thus is held closed. The legs are rods of iron attached to each front corner by screws through holes made to receive them. When the table is turned up, these legs drop down in line with the front of the cabinet, and are out of the way. When it is desired to use the table, all that is necessary to do to make it firm is to place the ends of these rods against the base board at the point of its junction with the floor. Holes can be bored to receive them if it is thought desirable to strengthen the support.

Miss Pollie's Popcorn Balls.

MRS. E. M. LUCAS.

It had stood there as long as the oldest inhabitant could remember; that quaint, low, brown house with its wide veranda and dear old-fashioned garden. Here were great clumps of fragrant lilac bushes, blue larkspurs, daffodils, tall spikes of hollyhocks, spicy June pinks—all in endless profusion—charming to the eyes and delightful to the olfactory nerves. Take a peep over the low fence, overrun with blackberry bushes, which divides it from the rear, and you will see rows of strawberries with their glossy green leaves and snowy blossoms, with here and there a red berry more venturesome than wise peeping forth. The "Keene Homestead" is, as every boy and girl within a hundred miles will tell you, one of the most delightful spots on the face of this mundane sphere. Its present owner, Miss Mary Keene, known to

FIG. 1. FRONT OF CHILD'S DRESS.

old and young as Miss Pollie, is a sweet, sympathetic woman who diffuses an atmosphere of purity and goodness wherever she goes. Miss Pollie, upon the death of her father, found her cash income exceedingly limited. Not being content with genteel poverty, she decided to find some means of earning money. After much thought, she solved the much-discussed problem of how a woman can earn money at home. Having an abundance of land at her disposal, and a natural liking as well as a natural faculty for her intended work, she succeeded even beyond her expectations.

Two summers ago she sowed two acres of land to popcorn, harvested and stored it away until the following winter. It was then manufactured into crisp, delicious popcorn balls, daintily wrapped in waxed paper. These were sold to children for a trifle, two for a nickel, and the fame of Miss Pollie's popcorn balls was soon noised about. It was not long before "children of a larger growth" were among the customers also. Upon balancing her accounts at the end of the winter, or, rather when her popcorn was all gone, she found that she had cleared two hundred dollars by the transaction. Last summer her popcorn covered five acres, and was all disposed of last winter. Among others she received several orders from confectioners.

Another source of income to her is her cocoanut candy, for the making of which she has also become renowned. I append, (with her kind permission), the recipe for Miss Pollie's cocoanut candy: Take four pounds of pulverized sugar, the beaten whites of two eggs and the milk of two cocoanuts. Stir together and place over the fire until it thickens. Grate the meat of the cocoanuts,

FIG. 2. BACK OF DRESS.

put it in with the milk, sugar, etc., and boil until it hardens quickly when dropped in ice water. Pour on flat, buttered dishes, and when cool enough mark into squares. When cold, break up and wrap each square in waxed paper.

Dress for a Boy One to Three Years Old.

CONSTANCE B. WHITE.

The materials required and their cost are:

2 yards sheer nainsook @ 50c	$1.00
⅜ yard insertion ¾in. wide @ 40c	.15
1½ yards edging @ 40c	.60
	$1.75

The dress, the front of which is seen in Fig. 1, is made of sheer nainsook, and will require two yards. Take six inches off the side of this for the sash, which is in two pieces, each one yard long. Leave the selvage on one side, and finish the other with a very narrow hem, and put a four-inch hem at the bottom. This is sewed to the end of the belt, as shown in Fig. 2, the sash in the illustration being broken to indicate length only. The waist is seven inches from the top of shoulder to the skirt, and has nine box-plaits, five-eighths of an inch wide, and one-fourth of an inch apart, when opened. The details of these are given in Fig. 3, showing the plait sewed and then opened. A whalebone is a very easy means of opening them. Plait and open before cutting out the waist, which should measure 10 inches across the chest for the first size, 11 inches in neck and 22 around the waist. The collar is dove-tailed in the front and slightly gathered, most of the fullness being in the back. The hem at the back is the same width as, and takes the place of, the middle plait in the front. Sew the top edge of the embroidery to the front, and put a cord, covered with two thicknesses of bias nainsook, around the bottom of the waist. The ends of the cuffs are finished like the neck,

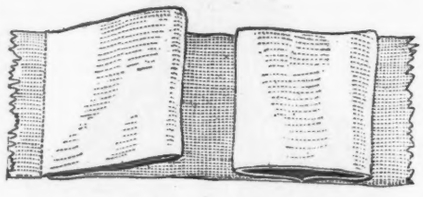


FIG. 3. BOX PLAITS.

and are gathered to a narrow band. They also have a few gathers at the armhole. The back is finished with small pearl buttons or gold studs. Cut the skirt 29 inches long, to allow for a four-inch hem, and three tucks one inch wide and half an inch apart. Turn in two inches at the top, to let down when the child grows. Gather the skirt and sew to the waist, facing it in on the wrong side, to conceal the seam. This is also very hand-

some made of French gingham, in either pink blue, or striped, with collar, cuffs, and waistband of white.

A Capable Southern Woman.

Mrs. Louisiana A. Hawkins is the wife of Hon. Hiram Hawkins, the worthy master of the Alabama State Grange. She is a talented and cultured Southern woman, who was born in Georgia and brought up in Alabama. Her father was a native Virginian of Scotch descent, a wealthy

MRS. LOUISIANA A. HAWKINS.

planter as well as a practical, scientific master-workman and contractor, who owned all his mechanics and laborers until the war set them free. He was loved and honored as a humane gentleman, who regarded the moral and physical welfare of his slaves as a sacred duty. Her mother was a native of Georgia and a descendant of the English Thorntons. Under this mother's tender care, the little Louisiana grew up to a happy girlhood. Her early education was carefully looked after, and she was trained in every domestic and feminine accomplishment. At the age of fourteen she was placed at one of the best schools in the South, where she remained until she graduated, taking first honors. At this period of her life her highest ambition was toward literary attainments, but the fates seemed to decree otherwise, for she was married before she was eighteen, and settled with her husband on the plantation where the greater part of her life has been spent. Here she felt called upon to give up in a great degree her chosen pursuit, and take upon herself the less congenial duties of plantation life. Her young husband, who was a classical scholar and trained from boyhood in New England schools and colleges for professional life, knew little of a Southern planter's calling. Soon after her marriage she was thrown from a carriage, receiving injuries which made her an invalid for years. Such was her practical turn of mind and cheerful disposition that she always found useful employment for mind and hands.

After eight years of suffering she regained her strength and was her old self again. Then the war began and was followed by the blockade with all its attending hardships. Her husband was a soldier in the Southern army, until his death from camp fever. This brave woman was left on the plantation with 49 slaves to feed, clothe and care for. She called to her assistance an overseer to direct the laborers, but she kept in her own hands the general management and control of the business interests. A time came when the supply of clothing was exhausted and none could be bought. Neither shoes, leather nor cloth were to be had in the country.

This bright Southern woman was equal to the emergency. The plantation carpenters, under her skillful directions, soon constructed hand looms and spinning wheels. With her own hands she made the sleys and harness for the looms, and taught the negro women to spin and weave both cotton and woolen goods. To procure shoes was a slower process, but a tannery was soon erected, leather was turned out and shoes were being manufactured on the premises. Thus, the plantation was made practically and absolutely self-sustaining.

Another trouble was at hand, the supply of salt was exhausted, and it became so difficult to obtain that, like many others, she had the dirt under the old meat house leached and boiled to procure salt. In the struggle she discovered and invented a method of saving meat without salt. By this method hundreds of barrels of pork were put up for the use of the Southern army. She also discovered a new process of purifying soap, and had a beautiful article of toilet soap made from the common brown lye. Medicines were almost impossible to obtain, and in order to provide common remedies for her own people, she gathered from the forest, the field and the garden the needed medicines. So skillful and diligent was she in supplying the wants of her homestead, that the blockade was scarcely felt.

Near the close of the war she was married to Colonel Hiram Hawkins, of Kentucky. A few years afterwards she and her husband were induced to take charge of the Union Female College of Eufaula—he as president, and she as lady principal. She had charge of the literary and art departments, and under their management the college was a success. Having large interests on the plantation which needed his attention, Colonel Hawkins gave up his position, and feeling it to be her duty to assist her husband, she returned with him to their country home. For several years her house was filled with girls who followed her to continue under her instruction. Successful business women, who have been trained after her idea of woman's noble mission, are doing good work in Alabama and in other adjoining States.

The great sorrow of Mrs. Hawkins' life has been the death of her children in infancy, but, accepting the decrees of Providence with cheerful resignation, she took the children of others to raise and educate. These are now independent and provided for, and she devotes all her time to assisting her husband in his business, in working for the grange, the church and the Sunday school.

For a number of years her husband has been in public life, and when away from home he leaves her as sole manager of his business interests on the plantation. Her great fondness for horseback riding, which she has never given up, enables her to follow the hands when necessary, and to look after the tenants and stock, as well as the mill interests.

The plantation is divided into 16 separate farms, with 22 head of horses and mules as the regular plow force, besides the number necessary to supply logs to the plantation and sawmill. One of the divisions is a farm of 30 acres for the hired squad under the special supervision of Mrs. Hawkins. Ten acres of it was planted in corn, 20 acres in oats. A second crop followed the oats (German millet for hay and field peas), all of which was successfully and profitably managed. This shows what may be accomplished by the energetic, educated wife of a farmer. She saved hundreds of dollars annually, which would otherwise have gone to an agent with less interest and less practical ability.

Handsome Crochet Lace, Chain Pattern.

FRANCES H. PERRY.

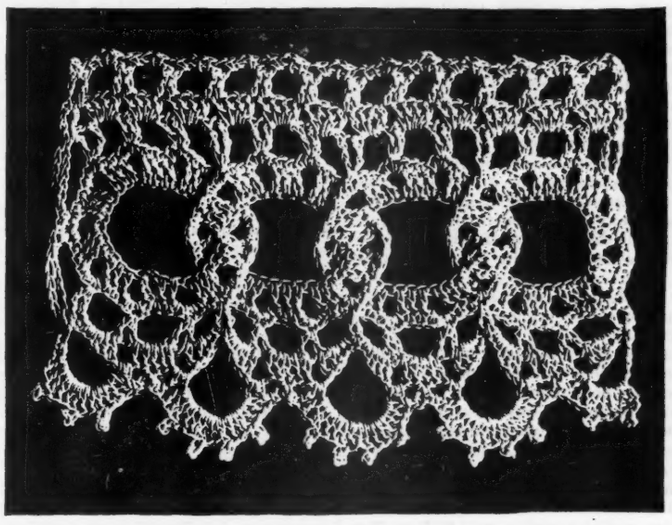
In this handsome lace pattern the rings, linked together as they are made, are completed first; then four rows are worked above the rings for heading, and four below for border. If the ends of the piece of lace are to be joined in a continuous round—as for sleeves, skirts, etc.—it is well to link the last ring through the first when it is crocheted, and then work the other rows "round and round," thus avoiding a break in the pattern where it would otherwise have to be seamed together.

For the first ring make a chain of 30 stitches, and join the ends, being careful not to twist the chain.

First round—Chain three (which answers for first treble), one treble each in next two stitches (always taking up two threads), chain two, one treble in every stitch around the ring with two chain after every third treble (this makes 10 clusters of three treble each), one single crochet in top of first three chain to join.

Second round—One double crochet in first treble, one double crochet in next, three double crochet over two chain,* pass the first treble in next cluster, one double crochet in each of the next two treble, three double crochet over two chain, repeat from star around ring, join; break off thread, leaving enough to fasten with a needle.

Second ring—Chain 30, pass end of chain through first ring from back to front and join; finish same as preceding ring. All other rings the same until enough are made for length required. Then fasten the ends of thread neatly on the wrong side, and arrange them as shown. By examining the sketch it will be seen that each ring has two openings or holes at the top and two at the bottom, and one at the middle of each side; the others lie just over or under corresponding holes in the ring with which it is linked.



CHAIN PATTERN OF CROCHET LACE.

First row for heading—Fasten thread at the upper side hole of first ring, chain five, one long treble in same place, chain two, *two treble with two chain between in middle double crochet over next hole, chain two, repeat from star once, put hook through first and second rings where they

cross each other just above the next hole (taking four threads, two in each ring), and work two long treble with two chain between, chain two; repeat from star until row is finished.

Second row—Four treble in space after two long treble, pass two treble, four treble in next space, pass two treble, four treble in next space, pass two long treble; repeat from beginning until finished.

Third row—In every cluster of four treble work one treble in the first treble, chain three, one treble in the last treble, repeat to end.

Fourth row—Work one double crochet, two chain, one double crochet over first three chain, chain one, repeat over every three chain in row.

First row for border—Work two treble in last double crochet over upper side hole, chain two, * two treble in middle double crochet over next hole, chain two, repeat from star once, two closely worked treble where rings cross (just as they cross on upper edge), chain two, repeat from star until finished.

Second row—Work one double crochet between two treble where rings cross, two double crochet and two treble over two chain, treble in treble, chain two, treble in treble, three treble over two chain, treble in treble, chain two, treble in treble, two treble and two double crochet over two chain, repeat from beginning.

Third row—Two double crochet in middle treble of cluster of five treble, chain two, two double crochet in two chain, chain seven, pass to next scallop, two double crochet in next two chain, chain two, repeat from beginning.

Fourth row—One single crochet between two double crochet at beginning of scallop, one double crochet in two chain, 15 treble over seven chain working a picot after the third, sixth, ninth and twelfth treble (a picot is three chain and one single crochet in first stitch of chain), one double crochet in two chain, repeat from beginning.

At the left side of the illustration is shown a neat method of finishing off the end of a piece of lace: When the first row for heading is completed chain six, one double crochet in first double crochet of side hole, chain one, pass one, one double crochet in next, chain six; then begin first row on other side for border. When the second row for heading is completed, chain three, double crochet in end of first row, chain six, double crochet in double crochet, double crochet in one chain, double crochet in double crochet, chain six, double crochet in end of first row for border, chain three, begin second row for border.

Dress Notes.

The economical woman, who has struggled through the early summer with "makeshifts" and "leftovers," can now have the benefit of prices reduced to half the amount originally asked, and can supply her wardrobe with two handsome gowns for the sum one would have cost in the spring; while never was there a season when remnants could be obtained more advantageously than at present. For instance, three and a half yards of double-width woolen goods—Bedford cord, finely-crinkled crépon, or the stylish plissé veiling—will be sufficient for a bell skirt and corselet, while a pretty contrasting remnant of changeable silk may be utilized for guimpe and sleeves, thus, with the addition of a little lace or ribbon, forming a costume in the most prevailing style.

The ready-made garments are, also, largely reduced in price, so the economist, this month, purchases the light-weight jackets and wraps required for late summer and early fall, while it is the writer's experience that white underwear can be as satisfactorily bought ready made as made at home, especially when the saving of time is an object, as it is with most of us in these busy days.

The popular blazer suits, too, are sold so reasonably that it scarcely seems worth while to order them from a dressmaker, while the shirt waists worn with them, and with other skirts as well, come very nice, and remarkably well fitting. For best, of course, these are of China or wash silk, and have a full selvage-edged ruffle or jabot down the front, but quite as fashionable are those of cotton cheviot, madras, or zephyr gingham; while there are the daintiest of dainty white ones, trimmed with frills, scalloped in color. To wear with a black frock, pink and blue madras waists are greatly liked, especially the first color, women of middle age adopting this combination, as well as young girls. Many are of rather masculine cut, having a shallow yoke, the fulness being gathered just below the throat, and a broad box plait down the middle; a turned-over collar, of course, and deep cuffs, smartly fastened with link buttons. Others, however, resemble a Norfolk jacket in front, and have a drawing-string at the back, along the belt line. They may be worn either inside or outside of the dress skirt, with a preference for the former way.

Fanciful silk waists are also much in vogue, with collar, bertha, cuffs, and sometimes bretelles of open mesh guipure lace; while the foulard blouses, that show a small figure on a light ground, are frequently copied in French cambric and satine. As an accessory to all-round waists, the round belt is still seen, but has had to give way largely before the bodice belt that is pointed and laced both back and front, or else only in front, while many of them come with bretelles, to extend over the shoulders, forming a veritable harness. The lowest-priced belts are of smooth or grained leather, then those of velvet, real seal, silk laid in folds, and so on, up to the silver and gold girdles, that are so pretty with light gowns, and those set with jewels. All kinds of white costumes meet with special favor, this season, and some of the most charming are of soft, white crépon, trimmed with black velvet. Pattern dresses, too, of white crépon are very lovely, with a bordering of daisies or violets, embroidered in their natural colors.

A simple, but extremely stylish, hat to accompany these white gowns is of white chip, with low crown and drooping brim. This is edged with white silk cord, and trimmed with a scarf of white embroidered chiffon. At the left side a white wing is thrust through the folds of the scarf and points forward. Another smart little *chapeau*, that may commend itself to the amateur milliner, is a white "rough-and-ready" straw, upon which are arranged standing loops of black velvet, edged with straw braid, while directly in front is set a Prince of Wales cluster of white ostrich tips, held by a rhinestone buckle. Strings are still used on many toques and round hats, as well as bonnets, and a comfortable fashion for warm weather, that comes from Paris, is to tie them behind, or low at one side of the braid or knot of hair, instead of beneath the chin. Favorite shade hats are of Leghorn or English straw, so fine and flexible that they will bend without breaking, the broad brim being caught here and there to the low crown with clusters of flowers or *choux* of ribbon.

A dressy accessory to a summer grown is a vest front of white, black or écru guipure net, banded with satin ribbon, to wear inside an open jacket bodice. This full front is set on a fitted waistcoat of silk or cambric, that buttons down the back, while the ribbons are arranged in a rather peculiar manner. One, starting from the shoulder-seams, above the armholes, rounds on the bust, where are set two rosettes, rather far apart. A second curving band extends from the middle of the armholes, and a third from below them; while, still further down, two more rows run straight across from the side seams, the lowest of all defining the waist line, below which falls a scant frill of the lace. Many light wool and silk gowns are now made with large, puffed sleeves of velvet in a contrasting color, and a wide girdle to match. With serge outing suits are worn a broad-brimmed sailor hat, low shoes of dark-brown leather, and white castor gloves, either with or without gauntlets.

August in the Kitchen.

August is a trying month to the housekeeper who is dependent upon the itinerant butcher, especially if she cannot have ice. Meat spoils very quickly in dog days, and the least suspicion of taint is enough to destroy one's appetite for the meal. For one whole August, when living in the country, we had fresh meat on our tables but once a week, and we found the change most healthful. For breakfast we had any of the fruits in season, blackberries or huckleberries with plenty of cream. Sometimes muskmelons began the meal. Then followed little molds of cold rice, hominy, wheat flakes, or some cereal cooked the night before and placed in the cellar in little cups. Then we would have a course of boiled or broiled tomatoes on toast, a boiled egg, homemade bread and butter and good coffee; or, perhaps, a broiled mackerel with cream sauce and potatoes stewed in milk. Once in a while a breakfast of fresh fish from the adjoining lake, or a tempting dish of corned beef hash with poached eggs on top, garnished with sprigs of fresh parsley. Hot breads and biscuits and pancakes were unknown that month, which was a great delight to our gentle housekeeper, as well as a great advantage to the health of the family.

Dinners were quite as simple. Sometimes only bowls of brown bread and milk, and as many pieces as we liked of a well cooked fruit pie, freshly baked and served with cream. At other times some delicious cream soup and a dish of new potatoes and peas, with cream and butter added to the seasonings. Again, a soup followed by a mayonnaise of lettuce and whole tomatoes. There is much nutriment in a salad dressed with oil, and although we are all Americans, we learned to become very fond of mayonnaise dressing.

Scalloped Salmon.—Canned salmon formed the basis of many nice dishes. Turn the contents of a can into an earthen bowl for an hour before using. Right here let me give this caution: Never let a tin of meat, vegetables or fruit stand even for five minutes, after it is opened, but turn out the contents at once into some earthen dish. Pick the fish into small fragments, mix with one-third the quantity of bread crumbs and add a beaten egg, two tablespoonfuls of melted butter and a teaspoonful of lemon juice for every pint of the mixture; season to taste, put in a buttered dish, dust with crumbs, and bake brown.

With Cream Sauce.—Make a pint of cream sauce, add the salmon in such pieces as it comes from the can, and garnish with bits of toast.

Swedish Salad.—After one of the rare occasions, when we indulged in a piece of roast beef, we used to make the following salad: Soak a large mackerel over night in cold water; drain, cover with cold water and cook ten minutes after it begins to boil. When cold, cut into bits, removing all the bones; add a pint of cold boiled potatoes cut into dice, another pint of dice of cold beef, a small minced onion, one gherkin cut fine and some minced parsley. Mix well, garnish with the inner leaves of lettuce and hard boiled eggs and pour a dressing made from three tablespoonfuls of oil, one of vinegar, and salt and pepper over all.

Cream Soups.—Every vegetable can be made into a soup, using milk or cream instead of stock. Take half a dozen white onions, peel and slice, add a tablespoonful of butter, salt, white pepper and enough water to keep from burning while they simmer until soft enough to press through a sieve; then sift over a tablespoonful and a half of flour and stir smooth while you add slowly a quart of hot milk. Press all through a sieve and finish the seasoning to taste. You may combine the onions with potatoes, dry beans boiled, or rice, in which case use less flour. A delicious soup is made with a pint of young white onions and green peas. Boil the onions, drain, put back in the saucepan, dredge with a tablespoonful of flour; add one quart of boiling milk and a large cup of cooked green peas; pour over dice of fried or toasted bread into the tureen. Most vegetable and cream soups are the better for these little dice of fried bread called *croûtons*. It is not always convenient for a busy housewife to make them when wanted, but a very nice substitute is made by laying buttered slices of bread half an inch thick on a pie dish, cut in squares and set in a good oven to brown. New carrots make a delicious soup. Boil a quantity and mash through a sieve; put a bit of butter in a saucepan; dredge in a tablespoonful of flour; stir in the *purée* of carrots, and dilute with hot milk until of the right consistency.

Cabbage Soup.—Remove the outer leaves and core from a medium sized new cabbage; cook tender in plenty of salted water; drain, press out the water, cool and chop fine. Put two ounces of melted butter in a saucepan; add the cabbage, and fry until all the butter is absorbed, but do not let it brown; sift over a good tablespoonful of flour, season with salt and pepper and add a quart of hot milk. Any kind of meat stock may be used instead of milk, or half cream and half milk.

Where it is necessary to keep meat without ice, wrap it in a cloth that has been wrung out of vinegar and hang it in a cool place where no sun will reach it.

Where it is desirable, as in the case of sickness, to keep ice in a sickroom, roll it in flannel and then in newspaper; tie a cloth over a large bowl and lay the ice on this to keep it out of the water. As you have occasion to use it break off little pieces by pressing with a large-headed pin against a corner of the ice. This will obviate waste and noise. Paper alone will preserve the ice.

Ninety-five in the Shade.

AGNES CARR SAGE.

"Ninety-five in the shade!" chuckled that salamander, old Sol, flinging down a fresh batch of fiery rays upon the city pavements which were, already, so scorching in the noonday glare that a drop of water from the street sprinkler sizzled and vanished in an instant, and the bare pink toes of the two chums, Daffy and Taffy, curled up instinctively whenever they touched the burning stones.

"Oh, dear!" sighed Daffy as she dropped exhausted on the step of a tall tumble-down tenement house in a narrow, dirty street where the air seemed even more close and stifling than elsewhere, where ashes, ancient boots and shoes, and portions of decayed vegetables lay unheeded in the gutters. "Oh, dear! How I wish Alice Maud was a sure-enough fairy and would give us what we want most!" and the small maid gazed wistfully into the stolid pink and white countenance of her dearest treasure, the doll presented to her last Christmas at the Mission school. "Wouldn't it be perfectly lovely if she should open her lips and say, 'Daffodil, I have read thy thoughts and will grant thee a wish. Speak, what shall it be?'"

"And you would answer: A cent's worth of hokey-pokey," put in Taffy as his eyes followed a vendor of that mysterious mixture trundling his two-wheeled cart up the contracted thoroughfare.

"No indeed, I should not. I would wish for a magic boat that would carry you and me miles and miles away from Buttermilk Alley. We would get in and sail away to the beautifullest place in all the world. A place better'n Central Park, for the apples and chocolate sticks and donkey rides would be given for nothing; there would be no signs 'Keep off the grass,' and we could pick out all the flowers we liked and pin 'em on our dress like the fine ladies on the avenue."

"Why, Daff, that would be Heaven!"

"So it would, or Fairyland, and oh, I wish I could go this minute!" and she bobbed up and down with excitement at her "Castles in Spain."

"So do I," drawled her friend who was rather bewildered by such flights of fancy, "but what's the use of thinkin' of sech things when there ain't no sech place, and no fairies, and no nothin'."

But Daffy was mistaken. There are good fairies even in this prosaic nineteenth century and one was coming down Buttermilk Alley at that very moment, though neither of the children recognized her in her plain gown and black bonnet; not even when she spoke to them in soft, gentle tones and placed in their hands two gay bits of pasteboard across which was printed "Fresh Air Excursion."

Taffy and Daffy could just spell this out, and "fresh air" sounded pleasant, so they put in an appearance, three days later, at the place appointed by the fairy, Daffy carefully bearing Alice Maud and a diminutive satchel packed with a clean apron and her only pocket handkerchief, while Taffy had a dilapidated umbrella—rescued from an ash barrel—tucked under his arm.

They saw dozens of other young folks who were evidently bound on the same expedition, as they boarded a long train for the first time in their lives, but they covered up their heads like silly little ostriches when they dashed through a dark tunnel and only breathed freely when the cars drew up at a pretty vine-covered station and the fairy turned them out into a brand-new world full of daisies and buttercups, and left them sitting bolt upright in an open wagon with a jolly-faced man laughing and shaking them gaily by the hand.

Daffy sniffed in the mingled odors of blossoms and new-mown hay; while Taffy gazed at the genial farmer, who let him sit beside him and drive, thinking, "He looks just like Santa Claus, only more so."

Presently, they reached a low red farmhouse and there was Prim, with her hair in a funny little braid; and Molly with ripples of curls all over her merry head, eager to bid them welcome and to introduce them to a fat puppy and a brood of yellow chicks; to the cunning brindle calf; to the sweet-bough apple tree dropping globes of mellow richness; to the daisy-spangled sward, and to the hammock swung in the shadiest spot in the orchard.

Daffy was in ecstasies and clasping her tiny hands, cried, "Oh, Taffy, it is Fairyland, sure enough, and here is the magic boat that floats in the air!"

"JUMP IN AND WE WILL GIVE YOU A SWING."

"Jump in and we will give you a swing," shouted Prim and Molly. No sooner said than done, and so we will leave them, our happy, contented, Fresh Air mites, in the cozy hammock, while the country breeze fans an unwonted color into their pale cheeks and they care not a whit if it is ninety-five in the shade.

A Florida Mocking Bird.

JEANETTE N. PHILLIPS.

I cannot say whether he is one or half a dozen, for he is wholly free, and I always see the same regalia of black and white and gray, and hear, day after day, the same voice and variations, from the same trees and perches. About April 1st he occasionally answered another at a distance, or held a brief contest with a rival, or drove one from his favorite perches, uttering quarrelsome cries the while. But usually he stands alone, a mere gray speck against the immense blue dome. He lifts his voice in matin lay at early dawn, sings at frequent intervals all the morning, and for an hour at midday he pours forth his

* * * * * "Full heart
In profuse strains of unpremeditated art."

The afternoon brings frequent solos, and the twilight hour is always cheered with his vesper song. I once heard him singing at night by the light of a few burning logs, in a field not far away, and often, all in the silent night, there floats from his overflowing throat, on the silvery Southern moonlight, a carol sweet and clear.

On a blustering, windy day, even though a sunny one, he retires to some sequestered nook, and passes the songless hours; it may be, in invoking the powers of peace upon the boisterous Æolus, or perhaps in studying the harmonies of rustling leaves and swaying grasses. During a three-days' rain, he was wholly silent, but a passing rain seems to dampen his ardor only slightly. I have heard his cheery voice "in thunder, in lightning, and in rain," somewhat subdued, it is true, but when again the sun shines out brightly, and glittering drops are falling still, he

"Showers a rain of melody,"

and with his voice cleaves the air from side to side, as does the shining rainbow. When the orange trees were in bloom, he often sang from the branches, and the rapturous melody and exquisite perfume were wafted in by the same soft breeze, bringing sensuous delight almost to intoxication.

As spring advances his songs are more and more frequent, of longer duration, and richer, sweeter, and more varied. He sometimes begins to sing just before alighting, and then stands for a few minutes, engaged in his song, coquettishly turning his head and body, and jerking his long, slim tail this way and that, then flies to another perch, for he is a restless bird. He often alights on the vines over the piazza, flying in with or without a companion, and uttering hoarse, scolding cries, wholly unlike his formal serenade. He is heedless, for I have seen him caught on a thorn bush, where he would shriek and cry most pitifully until rescued by some compassionate fellow bird. While driving in the pine woods, at a distance from human dwellings, I have never seen nor heard him, but he is to be heard near isolated homes in the forest, and always along the village street and about every house. He often comes hopping about my door, in lilliputian importance, dropping or spreading his wings with quickest movements, carrying his tail jauntily aslant, now picking up a tidbit of food with a comical air of fussy fastidiousness, now looking up as proudly as a tiny princeling might do. I seldom hear him and other birds singing or calling at the same time. Sometimes he warbles out a few notes between the cries of raven or bluejay, but when Sir Mocking Bird lifts up his voice in song, the twittering cardinal bird and the whistling dove sink into a respectful silence. One day I heard a stranger bird uttering an entirely new whistle, which my mocking bird was industriously trying to imitate; with poor success, however. He robs the strawberry beds, as later he will plunder the fruit trees, in perfect silence; then, mounting to some safe perch, he flings lavishly down, from a never-failing treasury, the crisp, abundant currency of his own affluent realm.

His voice is rich and sweet beyond description, and his notes are uttered in rapid succession, changing without a pause. There are trills, and turns, and warbles, and whistles, with scherzo, staccato, crescendo, and diminuendo modulations without end—"t-d-d-d-tr-r-r-rl-l-lu, te-te-teedle, teedle, he-wit, he-wit-wit-wit, tchu-we, tchu-we t-d-d-rl-tchu-we, chk-ush-tchk uh," etc., etc. Canary, and robin, and lark, and others, are all imitated, with improvised preludes and interludes

and variations, in all keys and all measures, which are sometimes interpolated with a few harsh, discordant notes, or brought to a close with a noisy "zip zip zip," like a brass band finale. But it is simply impossible to transcribe all the wondrous sweetness of mocking-bird melody. Many times a day I am drawn to the door to listen to the rapturous minstrelsy. I take up pen or needle, and either tool becomes a dancing thing, that hops and skips, as if in a vain attempt to keep "time, time time" to the tuneful strains. As I eat, the plainest fare is metamorphosed, by the magic of music, into daintier food than the far-famed peacock's brains of the Roman epicures, or even the time-honored ambrosia of the gods.

"I have never heard
Praise of love or wine
That panted forth a flood
Of rapture so divine."

It was on Easter Sunday that this merriest singer of the sunny Southland seemed to reach the climax of the seasons—to be lifted into a very transport of bliss. Almost continually throughout the day he held a very carnival of triumphant song, filling all the clear, resounding air with his harmonious gladness. Like a gleeful mountain brook, that babbles on and on with many a gurgle and ever a mirthful rondeau, his notes flowed down from their blithesome source. It seemed as if his ecstatic melody was a silvery thread, which on that glad day reached from the green and flowery earth, up through the crystal atmosphere, to the vast, serene, blue heavens, and along which vibrated the exultant songs of redeemed men and joyful angels.

A Word with the Coming Blacksmith.

V. C. MELVILLE.

There must be a great many coming blacksmiths among the boy readers of the AMERICAN AGRICULTURIST, and just for a little while I want to gather them about me and talk with them.

Boys, do you know that it requires as much, or even more, skill to become a good farrier as it does to become a good artist? The world is full of bunglers; men who follow custom, tradition or lawless will, who cut and carve the foot of a live horse as ruthlessly as they would that of a dead one, who, in fact, have neither knowledge nor sentiment. If you are going to be a blacksmith, be an enlightened one, be a progressive one, be a humane one; dignify the calling and make the world realize that its importance entitles it to be catalogued among the fine arts.

No man has the right to pose as a farrier until he thoroughly understands the anatomy and physiology of the foot he would shoe. The life of the average horse is short and hard enough without the unspeakable tortures inflicted by bad shoeing. It is popular to thin the frog and trim the sole of a foot until it yields to the pressure of the smith's finger. This is all wrong, as the best veterinarians will tell you. The frog is the natural hoof-expander; God put it there to serve a number of wise and necessary purposes. Under the operator's knife it fails of all these and becomes an injury. The paring of the sole is an equally reprehensible wrong. This sole was put there to protect the wonderful and highly sensitive parts within; and yet men stand by and let bungling farriers pare it off close. In the Short Course in Agriculture, now being given at some of our universities, the boys are instructed in judging different kinds of live stock, and the foundation of the teaching, so far as the horse is concerned, is, "No foot, no horse." The boy who intends to be a blacksmith needs just such a course as this, along with his special training.

We hear so much about laminitis; indeed, the greater part of the horse's ills come under this head, and the primary cause of a large majority of them is improper shoeing. Now, our best students along this line think that the farm horse is better without shoes, and the conscientious blacksmith is the one to impress this fact upon his customers. Money out of his pocket, it may seem to be, but a good man dares do right, whether he stands at the anvil or in the pulpit. (Of course this remark about farm horses is open to exception, but you will probably be the judges).

If you are going to be nothing more than an ordinary blacksmith, you will not be called to exercise your cheap skill upon valuable trotting horses; only science and costly skill are allowed to take a hand at these. Owners are careful and hard to please when their animals are very valuable, but the common horse—the one who does his drudgery for him—anybody can mangle his feet.

A well-educated farrier knows a good deal, not only about his business, but about other things that belong outside and yet are in touch with his calling. A man must be more than a hammerer of iron and steel and a driver of nails to be able to shorten a hoof that its angle conform to the natural inclination of the leg, and to determine all the nice measurements necessary to give ease and strength. Then there is the weight of the shoe—a matter of the greatest importance. Some one has to determine this according to the needs of the animal; the work it has to do and the like.

A majority of smiths nail shoes on without regard to the size or shape of the foot and then cut and rasp the latter to fit it. Boys, don't let this be said of you when you enter your calling; be wise, ingenious and humane enough to fit the shoe to the foot just as your shoes and boots are fitted to your feet.

A Haying Incident.

GEORGE E. NEWELL.

Wild animals often exhibit great fear instead of ferocity when meeting man face to face in their own wooded haunts. A few years ago the writer was a young farmer just out of his teens living in the northern part of Michigan. Enough hay could not be produced from the limited and stumpy clearings of the settlers to supply their cattle with food during the winter, so recourse was had to the small open marshes interspersed through the forest, where wild grass was annually cut and stacked.

One bright morning in August, I set off from my home for a marsh some three miles distant, a scythe across my shoulder and a lunch basket in my hand.

The marsh was a narrow opening in the forest through which ran a sluggish stream fringed by alders. The blue-joint grass that covered the flat was dense of growth, and nearly five feet in height. I swung my scythe through it all the morning, hearing no sound but the swish of the grass and the occasional strident shrilling of a cicada in the tree tops of the neighboring forest. When the warmth of the sun and my own fatigue told me that it was noon, I sat down on a bunch of the new-mown hay and opened my lunch basket. My mother had placed a freshly-baked cake in the basket, and on removing the lid its pleasant odor soon pervaded the air. Presently I heard the brush crackle in the woods a short distance below me. "A rabbit hopping about," I thought as I munched away. Suddenly there loomed above the unmown grass, not three rods distant, the head and shoulders of a large black animal! It was a bear, and he was standing erect with his forepaws hanging down and his sharp nose pointed toward the sky snuffing vigorously. Bruin had smelled the cake, but had not seen me. I was not frightened, but sat amazed at the suddenness of the apparition. The bear quickly dropped out of sight, but an instant later again arose out of the grass still nearer to me!

What a handsome picture the animal made as he stood there, his body slightly swaying, his head rocking from side to side with that pointed nose in the air, and his sleek fur as black as sable, glistening in the sun! Only a second did the picture last, however, for the bear discovering my presence uttered a frightened "woof!" and dashed into a thicket of quaking aspen trees as though a steam engine were after him. I had not thought of being frightened, the extreme timidity of the bear having dissipated all cause for fear.

I arose and resumed my mowing, but during the afternoon occasionally glanced over my shoulder—out of curiosity, of course—to see if the bear was coming back.

The Intelligent Horse.

GEO. A. STOCKWELL.

A man who wanted a horse for his family bought a fine appearing mare on the condition that he might return her within a month if not satisfactory. In about three weeks the mare came back. The dealer, an honorable man, was surprised. "Why," he exclaimed, "isn't she a good driver? Isn't she kind, gentle and sound?" "Yes, all that," said the buyer, "but she's not social, and has not the usual amount of horse-sense. She has no appreciation of what is done for her, does not recognize favors, and is altogether dull."

He wanted a horse that would appreciate petting. For three weeks she had received something every time her master entered the barn, and a lump of sugar every time she came to the house, but she did not manifest the slightest interest in the approach of her master. She wouldn't even turn her head in the stall to look at him. Evidently she had either no gratitude, or no memory.

Compare this mare with the one that came into the man's possession later. The first morning when her master entered the stable she had a greeting for him which he understood very well. He gave her an apple. The next morning he did not show the apple at first, but she neighed for it; she had not forgotten. He goes to the stable about the same hour. When he is tardy she calls for him, and, when he appears, shows her love for him by arching her neck and rubbing her nose against him.

When the grippe kept him in, the mare called all day for him, nibbling at her food and listening for the familiar footstep. The apple or piece of bread from another's hand did not pacify her. She wanted her master, the man who talked kindly to her and petted her. When harnessed to the carriage she hurries to the house and looks expectantly for the lump of sugar that is coming. If the sugar is forgotten, considerable urging is required to get her away. Experience shows that the result of petting is much more satisfactory than that of harsh treatment. In the long run, sugar will do more with a horse than the whip.

Burial Rites of Central American Indians.

DINAH SHARPE.

In the interior of Central America, where many tribes of the native Spanish Indians still live, their customs are as ancient and as far removed from the educating influences of our present civilization as when Christopher Columbus first discovered the country, just 400 years ago. Kindly in disposition and unused to warfare, these tribes still cling to the peculiar forms and ceremonies of their crude superstitions, unquestioned and happy in their ignorance.

Our party, fortunately, had arrived in time to witness the funeral ceremony of the chief's daughter, for which the preparations were just completed. A dugout, which is made by cutting the trunk of a tree the desired length, splitting it through the long center, and hollowing out either portion, constituted the coffin. In one of these primitive halves the body was laid. A sheet of coarse, brown material, long and narrow, like a scarf, was wrapped firmly round and round the stiffened corpse. As the bearers lifted the rude open coffin, carying it headforemost, we noticed that the long vines of the country had been spliced to a length of several hundred feet, and tied to the big toe of the woman. As the vines trailed their length after the coffin, great caution was exercised by the straggling procession, in order to avoid stepping upon them. When the edge of the wood, wherein was the burying ground, was reached, the funeral cortége deliberately sat down and rested quietly for quite a long time. All the men had machetes, without which native weapon of offense and defense no real Central American is ever seen. With these they began slashing about right and left, up and down, in the most vigorous manner. Finally, one of them, with a sudden blow, cut loose the vine from the toe. This was the signal for the bearers to pick up the dugout and run with it, at the very top of their speed, to the grave already prepared. Covering the body with the other half of the dug-out and tying the two halves together, in less time than it takes one to tell it, they lowered it into the grave, which was then filled up with with most precipitate haste. A look of satisfaction and relief came upon the faces of all, although the men still kept on slashing about with their machetes. Suddenly the bereaved husband began to belabor his children in a vigorous manner, quite undeserved, with whips and sticks. Their cries added to the general hubbub, until, feeling somewhat inclined to interfere and prevent such cruel punishment, we asked what on earth the poor little sobbing creatures had done. For answer, they explained that sometime, in the future, the children were sure to do something for which their mother would have punished them. So, here, at her grave, that she might lie easy in it, they performed this touching little duty for her, "previous" though it might be, and

sufficiently adequate to cover any offense short of crime.

The funeral ceremony is really the practical exponent of their religious belief. The crude cunning of their argument is not illy reasoned out, since they believe themselves capable of outwitting the devil himself. His Satanic Majesty is supposed to follow at the very end of the long, trailing vine, and so they lengthen it out as much as possible. When it stops trailing the devil stops following and rests, also. Then, as he waits for it to move on, these clever ones think they have outwitted him by suddenly cutting the vine. When he discovers it cut, and arrives, in great haste, at the grave, lo! the earth has covered it, and the disappointed devil has then no power to snatch the poor soul away while it is pursuing its journey toward the happy hunting grounds. The machetes cut and slash at any unseen emissaries of darkness, and the evil spirit that may linger about to help him get possession of the soaring soul, or impede its flight on the unaccustomed, untraveled road to future bliss. On this lonely journey, however, food and drink must be provided. So, for a fortnight, a mug of liquor, tortillas, bananas, and other fruit, were nightly placed at the head of the grave. To find, in the morning, that these refreshing viands had disappeared, was the surest and happiest proof to the anxious minds of the sorrowing relatives that the spirit was wending its way peacefully, and not hungrily, along toward that bourne where we must all arrive some day. It is almost needless to add that, during the fortnight, the high priest, as a saintly duty, holds high carnival all to himself, in this well-arranged feast, without any further exertion to obtain it than is necessary to secretly and silently steal it away. The intellects of this faithful community may also have been somewhat clouded, as, during this fortnight, they kept up a perpetual "wake," so to speak. Preparing great quantities of the native wine, they formed a circle around the vessels in which the wine was fermenting, and in this state drank it until not a cupful was left. It was not long before they were all maddened to frenzy, but continued imbibing this coarse, most unpalatable stuff, interspersed with the wildest dances, cries, and whoopings, accompanied by a monotonous undertone of weird song. So utterly unconscious or oblivious had they become, in a short time that one of our party, with incontinent enterprise, made off with the strange wooden idol they were worshipping. It stood in the very midst of them, and, being subsequently landed safely in New York city, remains as a curious trophy and souvenir of an amusing and interesting scene.

A FUNERAL PROCESSION IN CENTRAL AMERICA.

A Mosquito Legend.

LUCY ELLIOT KEELER.

Hiawatha is the subject of many Indian legends, only a small number of which are included in Longfellow's beautiful poem. The little boy, reading a book of poetry, who declared angrily to a mosquito singing about his ears, "If you do not move off, I will fling Hiawatha at you," spoke more wisely than he knew.

The Indians say that hundreds of years before Columbus came to this country, a great mosquito invaded Fort Onondaga which was the capital of the Iroquois. The mosquito did great mischief to the people, for on whomsoever it lighted it sucked out his blood and killed him.

The warriors made several expeditions to expel the monster, but failed. The country was invaded until Hiawatha, the Holder of the Heavens, was pleased to visit the people. When he was with the king at Fort Onondaga, the mosquito made his appearance, as usual, and flew about the Fort. Hiawatha attacked the monster. It flew so rapidly he could hardly keep in sight of it, but after a few days' chase it began to fail. He hunted it to the borders of the Great Lakes, toward the sunsetting, and round the great country. At last he overtook the monster and killed it near the salt lake Onondaga, and the blood became myriads of small mosquitos.

The Indians place the greatest reliance on the truth of this legend especially when they visit the swamps about the Great Lakes.

Our Puzzle Column.

ANSWER TO THE MAY PUZZLE.

Last summer I took a vacation, and as I am very fond of *hunting* I took along my *gunn* and *dog*. When I arrived at my destination, I found my friend, *Henry Black*, waiting for me at the station. He had brought me a *black horse*, but had neglected to procure me a *saddle*. I told him I must have one, but he said that after I became a good *rider* I would be glad I did not have one. The first night I was there I *shott* a big *moose*, which made me quite happy, as I had never seen one before. The next morning I went out to *fish*, and the first thing I saw as I neared the *lakeside* was a lot of *salmon* and *trout*. We had very good luck and carried home over 100 pounds for our forenoon's work.

In the afternoon, I was introduced to Miss *Ada Randolph*, who was a very bright and well-educated young lady. After a few commonplace remarks, she asked me if I was a good *singer*. I replied that I was not a professional, but sometimes amused myself a little in that line. She said she played the *violin* and would accompany me, if I liked. My selection was *America*, but I had hardly started when she stopped playing and said my voice sounded like a *wildcat*. I am not very sensitive, but her remark made me *mad*, and I retaliated by saying she was dreadful *green*, and did not know a *Bow string* from a *clam*. This made her so provoked that she sent for her *twin sisters*, who made matters right by saying we both needed a *little rest*. The next morning when I met *Ada* she was as *pleasant* as could be, and when I left for home that afternoon she gave me a *red apple*, and in return I asked her if she would not *kissimee*, which she did, and I went away feeling that I had had a very pleasant vacation. As we passed out of town I had a very *pleasant view* of the place, and even now my memory dwells with *delight* upon the *happy land*, where I found such *sweet air* and where I formed such a *friendship* with the before mentioned young lady, that she is now my wife, a fact which I have never regretted to this day, and never expect to.

THE PRIZE WINNERS.

A. R. Clement, Strongsville, O.; Miss Grace O. Vernon, Colma, Cal.; Maud T. Geagen, 40 Highland Ave., Yonkers, N. Y.; E. A. Deckler, 411 Laurel street, New Orleans, La.; Miss Anna M. Nutting, Kent, O.

Snake River Basin, Idaho.

Farming and stock-raising in Idaho, or anywhere on the great plateau between the Rocky and Cascade Mountains is very different from that in the more rain-blest States, owing to the great difference in topography, climate, soil, and production. The altitude and the coast winds render the air dry and the general climate healthful. From the Snake River plains, where the snow and rainfall is comparatively light, winters very short and summers long and hot, to the tops of the mountains, northward and southward, the atmosphere is cooler and the snow and rainfall greater. The climatic change is accompanied by a corresponding change in native vegetation. The plains are covered with a luxuriant growth of wild sage brush, which extends up the nearer valleys of tributary streams and over some of the lower hills. But in the higher valleys and hills blue stem and bunch grasses abound. The altitude ranges from 1,800 to 12,000 feet. The great Snake River basin and the valleys and hills are destitute of timber except a few Balm of Gilead and Black Alder trees growing along the streams. Snake river flows for 1,000 miles, describing a semicircle through the State, in a tortuous channel between deep sandy or rocky, treeless banks and lava cliffs. Near the source there is some timber, and wherever the banks are low they are fringed with willow thickets. The mountains, which comprise about two-thirds of the area of the State, are very high and rocky, and are clad with evergreen forests of pine and fir. The Snake River plains, consisting of irregular series of bench-land plateau, in places broken up by rolling hills, follow the general course of the river, and average from 20 to 40 miles wide, growing wider toward the west. The summer rainfall in Southern Idaho is insufficient for any crop raising except rye. Therefore, irrigation is indispensable to agricultural pursuits. There are but few settlements along Snake river, since the bed is too low and the current too slow for people of limited means to utilize the water for irrigation. After passing the mouth of Weiser river, and at about the forty-fifth parallel, this majestic river glides gradually into a mountain canyon, where it is lashed into foam for about 275 miles before coming out at the confluence of the Clearwater. The Big Salmon, flowing irregularly through the central part of the State, from east to west, with all its branches, is inclosed within a mountain fastness, which forms an almost impassable barrier between the northern and southern portions of the State.

L. L. SHEARER, Washington Co., Idaho.

Dairy Farming in Victoria.

The colony of Victoria, both in regard to soil and climate, is peculiarly well suited for dairy farming. The climate is so mild that the stock require no shelter. There are farmers who put their cows into sheds on winter nights, and feed them on straw or green fodder. They are the exceptions, and are rewarded by extra returns. No complete return of dairy produce has been obtained in Victoria, but in 1890 it was ascertained that 31,775 milch cows produced, on the average, 42,285 gallons of milk daily, or about 152,000,000 gallons annually, from which over 2,200,000 pounds of butter and 1,790,000 pounds of cheese were made in the year. The value of the dairy produce of the colony was estimated at £2,921,927. About 400 tons of butter were exported to England, and brought good prices. Dairying is making great advances in the colony, owing to the introduction and adoption of the American factory system. Within the last 18 months there have been erected about 60 butter factories and creameries. The fact that the colony is in the Southern hemisphere is important. When it is summer in Australia it is winter in England. The dairy produce manufactured during the spring and summer in the colony can reach England in time to supply the winter market. In this reposes a great advantage over America, which has its seasons simultaneously with those of Europe. To have a supply of feed for the cows in January, February, and March, when the natural pastures are burned up, growing green feed or ensilage is advocated. In 1890 ensilage was returned as having been made on 231 farms. The total quantity made was set down as 8,294 tons; it was probably much more, but no returns of ensilage having been asked for in previous years, the inquiry was new to the farmers.

D. E. MARTIN,
Secretary for Agriculture, Victoria, Australia.

Agricultural Conditions of West Canada.

The three Western Canadian territories embrace a very wide range of soil, climate and produce. Eastern Assiniboia, where most of the grain is now raised, is much the same as the higher lands of Dakota and Manitoba, and has much the same risks, except that there are no hot winds. West and northwest of that are some poor tracts. On the Saskatchewan and its tributaries there is a region of really fertile land, and, where settled and cultivated, choice wheat has been raised. But to go there looking forward to wheat as the mainstay, is to run a good deal of risk. The climate and soil are suitable to all kinds of stock, water being abundant, and the herbage very nutritious. There is not the steady cold of winter as in the Dakotas. The chinook winds keep the average temperature of winter much warmer, but now and then it falls to 30° or 35° below zero.

Both countries keep mounted policemen along the boundary line to prevent smuggling. Canadian farmers try to smuggle in cotton goods, canned fruits, coal oil, glucose syrup, and rubber shoes. Coal oil is the dearest thing in Western Canada, selling for 35 cents a gallon at Regina, up to 50 cents in outlying places. Against that put the fact that fuel and fencing timber are usually to be had for the cutting, and in the Saskatchewan country, and some other places, a thick coal seam crops out on the coulees and costs $1.50 to mine. Best Canadian blankets sell in Winnipeg at 75 cents a pound, and genuine woolen clothing a third below American prices. On the other goods named, the advantage in favor of American products about balances with the gain on woolens. Grain does not differ very much in value from the prices at places in Dakota outside of the best settled districts. Cattle are worth two and one-half to four cents, live weight, on foot; prices being regulated by quality and distance from the best shipping points. For the right men there is money in sheep raising, lambs being worth $4 to $5 a head, wool lower, and mutton two or three cents a pound higher than in the States. Local taxation, as a rule, is very moderate, and there are no "rustlers" on the cattle ranges.

One of the Canadian missionaries casually interviewed lately by the writer—who is fairly posted on the merits of his particular district—did not tell any untruths, but he did leave out of his little talk not a few of the unpleasant features, and talked volubly of the successful ones only, and of the great future before his section of country, which is bound to be settled before long. It is well understood that an experienced pioneer from Dakota or Ontario is worth half a dozen Tenderfoots from England or half-starved Russians, which accounts for the zeal displayed in attracting settlers from Dakota. In a pretty close acquaintance with pioneer life, ranging from Sioux City to Calgary, the writer has found that the climate and the country are always of less consequence than the man on top of the land. Put an English Puritan or a north of Ireland Presbyterian on a rocky hillside in New England and they will make a home, however humble, in which the founders of a great nation will grow up to robust moral and physical manhood. Put a Spaniard in California, and at the end of centuries you find a horde of semi-savages round the luxurious dwellings of a few senors and senoritas. Some do very well in the far Northwest, who might do quite as well, by good management, elsewhere. Much depends on a man's own quality as a pioneer wherever he is.

R. WAUGH, Manitoba.

Farming Conditions in Queensland.

I am delighted to know that my brother farmers in America are in so satisfactory a condition as to crops and prices. May they long enjoy prosperity! From a farmer's point of view, things were never worse here; in fact, every farm product is as low as it can be. I hope that we have touched bottom and that things will turn soon. We have our early maize crops all in the barn, and there they are likely to remain, as maize is quoted at one shilling and three pence per bushel. Fancy, five shillings for a four-bushel sack, and it costs me three shillings per sack to deliver in Bundabey, so I have two shillings to pay labor, etc. Now that times are bad, our paternal government has doubled railway freights, and put a tax on our newspapers of 50 per cent. on publishing prices of all penny papers. So much for the encouragement of pioneer selectors. The remedy, in my opinion, is to return farmers to parliament. We are expecting to return a good number of the workers to our next parliament.

Your splendid semi-centennial number to hand, and am very glad to have photos of the eminent men whose writings I have enjoyed so long. May you long be spared to administer to the wants of the farmers of the world! Your influence for good is world-wide. Knowing that you will watch the farming interest, and not be afraid to hit abuse wherever it crops up, I wish you every success.

W. BROTHERTON, Queensland.

The Abandoned Farms of Vermont.

Vermont, in common with other States, contains some land which is naturally unfit for cultivation, and, owing to the range of mountains which extends the entire length of the State, the proportion of such land, when compared with the amount of good farming land, is, no doubt, greater than that of many other States. At an early period in the history of this State much of this kind of land, situated upon the sides, and even tops, of the hills and mountains was unwisely cleared, and it was attempted to carry on agricultural operations there, although the slope was, in many places, so steep as to prevent the use of even the plow, and the naked rock often covered three-fourths or more of the surface. These circumstances gave rise to the various stories about filing sheep's noses to enable them to feed between the rocks, of planting beans on the hillside by means of a shotgun, and many others, equally absurd. If such tracts of land can be called farms, there are many abandoned farms in Vermont, and their owners would be better off if many more should be abandoned.

In traveling through the State, one sees many dilapidated and unoccupied buildings upon as fine farming land as is to be found in New England. The natural inference is that the farms to which they belong have been abandoned, when, really, such is far from being the case. Formerly, when farm work was all, or nearly all, done by hand, a man could cultivate but a comparatively small amount of land, and, consequently, the original farms were divided and subdivided into several smaller ones, often less than 20 acres in extent. Upon each one of these was erected a set of buildings which would have done credit to a farm of three times its size. In later years, by the aid of improved machinery, a man is able to cultivate vastly more land than he could have done 50, or even 20, years ago. In consequence, many of the more prosperous farmers have bought one or more of the adjoining farms, the buildings upon which, from sheer want of use, have fallen into decay. There is not sufficient inducement to cause the owners to keep them in repair, and they are seldom worth the trouble of tearing down and removing. Hence they are allowed to remain, an eyesore to passers-by, and a mute, though false, witness to the impoverished condition of the Vermont farmer, who, instead of being on the verge of bankruptcy, is often loaning money, at interest, to his brother farmer in the West. This, in a nutshell, is the whole truth in the matter concerning the abandoned farms in Vermont.

CHARLES ORMSBEE, Washington Co., Vt.

Second Crops in Texas.

An experiment in cucumber growing may be of interest to farmers who desire second vine crops, as well as to gardeners who always realize good prices for late-grown vegetables. A market gardener had a plat of cucumbers which bore heavily all summer and showed considerable vigor. He noticed that close to the roots the old vines were sending out young shoots and that these were bearing a few blooms.

Selecting a few hills which had ceased to bear he cut the vines close to where the shoots were putting out and immediately cultivated them. The result was a fairly good supply of cucumbers. The gain in time of preparing and planting a new crop is considerable, but the chief advantage lies in the fact that the old roots are well set and yet

sufficiently vigorous to do duty, while it would be difficult in the heat and drouth of the summer to get new seeds to sprout. A Georgia watermelon grower told me that he treated a lot of watermelon vines in the same way, and made a splendid second crop. C. N. OUSLEY, Dallas Co., Texas.

Stock-Raising in Florida.

Eastern and Southern Florida are clothed with grass, but of such poor quality that cattle must have an unlimited range. After the annual burning, the grass is somewhat tender, but soon becomes wiry, and, in winter, though it may be green, it is not relished, and the herds resort to the margins of lake or river, where the savannas nourish tender grasses.

In a wet winter, when these prairie lands are more or less submerged, the suffering and loss is great. The range, therefore, affords a strong contrast to West and Southwest Florida, and the native stock, as may be expected, is vastly inferior. To the lankiness of the original Texas steer is added a diminutive size.

In Florida, however, it is sheer folly to turn out Northern cattle and expect them to get a living. If this were the only difficulty, the animals' feed might be supplemented by barn feeding, but unfortunately it is not. One most extraordinary thing is the disastrous appetite for sand often shown by Northern cattle, so that it is necessary to keep them on a board floor and never allow them to get to the ground.

The Southern or Texas fever destroys many of these shipped-in cattle when placed on the range. A Western man accustomed to keep stock on the range in summer, with plenty of hay and corn in winter, brought his horses, cows and poultry, and, in spite of remonstrance, let them run in the woods, the result being that all have died. Home-raised stock withstands the climate.

D. R. PILSBRY, Orange Co., Florida.

The Range Cattle Industry.

Many fortunes have been made by grazing cattle on government land. The advance guards of civilization covered the prairies west of the Mississippi with vast herds of semi-wild cattle. There were no fences, and the herds were not kept separate, the cattle being identified by brands burned into the hide.

Every spring the owners of the cattle that wandered over a certain range of country would join forces, and their cowboys, who kept the general herd from emigrating to other ranges, and broke the ice on the watering places in winter, now rode around a vast extent of country, driving all the cattle to a central point, where the stock was bunched together in a "round-up." The calves were caught with noosed lariats, thrown by the cowboys on horseback. The lariat was fastened to the pommel of the saddle, and by this means the calf was dragged to a fire, where it received the brand borne by its mother. The bunch was then left upon its range, but animals whose brands showed that they belonged to other ranges were driven along with the round-up outfit, and returned to their proper grazing grounds.

In the autumn the cattle were again rounded up, and those which had grown fat during the summer were cut out from the general herd and driven to the nearest railroad shipping point. [The illustration shows the method of lariating a steer to inspect a brand which could not be seen clearly at a distance. The bunch of cattle has been rounded up and a steer cut out from the herd.]

As soon as the government land was settled by farmers, the range cattle industry was compelled to move further west, but the cattle barons did not yield to the farmers without many a severe conflict, the cattle owners doing all in their power to discourage settlement. The grazers, however, were driven further west, and are now walled in by the Rocky mountains. The late troubles in Wyoming between the large and small cattle owners, is probably the last desperate conflict between the herdsman and the farmer. The range cattle industry is doomed to the fate of the red man and the buffalo. More cattle are now feeding on the small farms of one State in the Great Plains than could be ranged over the whole area from the Lakes to the Gulf.

GEORGE ARGUS, Laramie Co., Wyo.

A CATTLE ROUND-UP ON THE PRAIRIE.

Oklahoma and the Indian Territory.

The rapid settlement by white men of Oklahoma Territory, makes it certain that they will finally annex and govern the various reservations in the Indian Territory. The Indian lands are fertile and unused. The civilized white man uses them to the best advantage. The last Congress appropriated about three million dollars to pay the Choctaws and Chickasaws for their lands, and a treaty is to be made.

The Cherokee commission have concluded successful negotiations with several tribes for 13,000,000 acres, to be thrown open for settlement as follows: From the Cherokee 6,000,000 acres, from the Cheyennes and Arapahoes 3,500,000, from the Wichitas 500,000, from the Kickapoes 200,000, from the Tonkowas 90,000, and small amounts from other tribes.

The names of the tribes that occupy the Territory are: Cheyennes, Arrapahoes, Osages, Cherokees, Creeks, Wichitas, Pottawatomies, Seminoles, Sacs and Foxes, Nez Perces, Poncas, Pawnees, Choctaws, Chickasaws, Comanches, Apaches, Kiowas, Quapaws, Peorias, Ottawas, Shawnees, Yandos, Senecas.

The Indian Territory, produces fine corn, wheat, oats, and cotton. Fruit is very productive. The larger towns within the reservations are, Ardmore, McAlister, Muscogee, Atoka, Vinita, Tishomingo, Caddo, Eufaula, Webber's Falls, and Colbert. The five railroads running through it are: The Kan., S. & Col. S. F., the M. K. and T., and the San Fransisco and S. L. The towns are occupied by white people, and churches and schoolhouses abound. A bill has been introduced in the House for the admission of Oklahoma and the Indian Territory as a State, as they have a larger population than some of the Western States.

W. L. MOORE, Denton Co., Texas.

Agriculture at Trinidad.

Our central agricultural board is trying to formulate a plan for agricultural education for the three principal classes of agriculturists—landowners, overseers, and laborers. The scant literature adapted to this section, and the special wants of our planters make it difficult to carry out the scheme. Cocoa culture is receiving quite an impetus; the plant is hardy and a prolific yielder, although the bean is more difficult to ferment than the best Ceylon cocoa bean. This crop is of increasing importance, having been nearly 21,000,000 pounds for last season, an increase of 33 per cent. in 10 years. In former years the bulk of it was exported to England and France, but within the past five years exports to the United States have increased 86 per cent., and this year will be upward of 5,000,000 pounds. Bats are a great nuisance in this colony. They are spoiling the fruit trees in St. Anne's district; they are killed by hand or by putting strychnine into the best fruits, which are carefully marked. The bread fruit (*Artocarpus excisa*) thrives after it is once started, but it is difficult to raise the plants; a handy method is to dig a trench around the base of a large bread-fruit tree, cutting such roots as are met with, which will produce thrifty shoots, that may be transplanted when well dug. Silk culture has been tried here, and proved a failure. Our lands are particularly suited to the cultivation of coffee, though but little has been done in that direction as yet. Experiments in coffee culture are being stimulated by offers of prizes from the government. Strenuous efforts are also being made to prevent the further waste of forests. Sugar is our great money crop, but the product of 1891 was only 61,000 hogsheads, owing to the unfavorable season. The vacuum method of manufacture is gradually displacing the old-fashioned open-pan method. Nearly three-fourths of our 1891 crop of sugar was exported to the United States. L. B. H., Port-of-Spain.

It Fills the Bill.—The AMERICAN AGRICULTURIST fills the bill. There is no use trying to farm without it. H. B. COOK, Sullivan Co., N. H.

FARMING IN FOREIGN LANDS.

A disease exists among the banana trees of Fiji.

Good rains have fallen in Russia and crop prospects are excellent.

The cultivation of tobacco has been taken up with energy in Siam.

In Ireland there are now a million more sheep than there were in 1889.

The New South Wales vintage was only two-thirds that of last year.

The drouth in Australia has been effectual in killing many thousands of rabbits.

The New Zealand government proposes starting a silk industry in its northern districts.

The government of Sweden has decided to reduce the duties on wheat, rye, and their meals.

It is proposed in New Zealand to send 25 tons of well-dressed flax to the Chicago Exposition of 1893.

Canned rabbits and rabbit skins to the value of $950,000 were exported from New Zealand last year.

The northern portion of Algiers has been visited by a swarm of locusts, and all cereal crops devoured.

Phylloxera has appeared in no less than eleven provinces of Spain, doing great destruction to vineyards.

The production of barley in Victoria has decreased from 1,500,000 bushels in 1890 to 750,000 bushels in 1892.

A Tasmanian agent has been sent to India to ascertain the possibilities of a market there for the colonial apples.

Agricultural returns of the last Tasmanian crop season show an increase in grain crops of 43 per cent., and in fruit of 48 per cent.

An outbreak of pleuro-pneumonia has occurred near Adelaide, and inoculation was resorted to in order to prevent the spread of the disease.

Insect pests have increased in Victoria, and much damage has been done to young trees by the use of unsuitable compounds as insecticides.

The Java government, heretofore dependent upon compulsory labor in coffee growing, intends now to try paid labor by the contract system.

The agricultural outlook in France is far from favorable. There has not been enough rain to soak the ground, and all vegetation has suffered from drouth. July weather improved codditions.

In addition to a renewal of shipments of oats from Russia, the London market is receiving large shipments from Turkey, while supplies from Sweden have practically ceased.

The grub has seriously affected the potato crop in the northwest of Tasmania, consequently the Australian markets have been oversupplied with unripe tubers dug before total destruction.

Cape of Good Hope fruit, particularly peaches, grapes and pears, have secured a good footing in the London market, and account sales show a handsome profit notwithstanding the high freight charges.

Samples of cotton grown at Ipswich, Queensland, show a good fine staple, beautiful luster and great bulk of growth. The cotton is being extensively cultivated, and a factory is in course of construction.

Tobacco of a fairly good leaf, but lacking in flavor and burning qualities, has been grown in Trinidad. A few bales were sold in London at 14 cents per pound.

The duty on raw sugar in Germany has been removed and will now be levied on the sugar as it leaves the factory. The export duty on German sugar was also reduced from the beginning of last month.

The heavy shipments of old-crop India wheat to the English market have ceased and the new crop is not coming forward with any freedom, the May shipments being 200,000 quarters less than in May of last year.

The Opotiki district in New Zealand has suffered from the ravages of a regular avalanche of caterpillars, which stripped the maize fields to bare stalks. They are of a blackish brown color with red heads.

Dried bananas are packed at Trinidad by slicing them lengthwise, and wrapping about a dozen closely together in their own leaves, the ends being cut off. The package looks neat, is air-tight, and preserves the flavor and juices of the fruit. The cost of placing them on the market is four cents per pound, which does not include any profit to the producer.

The inspector of stock in Victoria thinks it premature to prohibit the importation of horses from California, owing to the reported prevalence there, of glanders, till more reliable information has been obtained.

A grass famine, decline in grape and indigo growing, and a short wheat crop, as compared with last year's, are reported from different sections of India. The borings for petroleum have also proved unsatisfactory.

The shortness of the supply of jute in India, and the great increase in price, have suggested the idea there of putting a duty on all the fiber exported, as India jute spinners are suffering because of the deficient supply.

The French consuls in Australia have warned the butter makers of Normandy, and also the French Canadians, that, owing to its excellence, they must look for keen competition from Australian butter in the English market.

The South Australian government has set apart $50,000 in bonuses for the export of butter to foreign countries, the amount to be paid at the rate of four cents per pound on butter securing experts' certificates during three years.

The average cost of raising rough Peruvian cotton is from two to three cents per pound. It is marketed in Liverpool, packed in bales of 200 pounds with iron bands, and the yield is from 300 to 400 pounds of raw cotton per acre.

The land available for cultivation in Vancouver island is chiefly that which is covered with drift deposits of clay and sand, and lies at no great elevation above the sea level. Sandy gravels prevail on higher levels, producing large timber and coarse grass.

One hundred butter dealers in Hamburg have formed an association, the members proclaiming that they have not sold adulterated butter or margarine, and they also offer a reward of $25 to any person proving that its members have introduced such articles into trade.

Complaints are rife in Australia that the navies and mercantile marine of Europe draw their supplies of salt beef from Chicago, and especially the English vessels on the Australian seas, which are provided, for both the inward and outward voyages, with American meat.

The almond crop of Southern Spain has increased 25 per cent., olive oil decreased 50 per cent., and figs increased 20 per cent. in 1891 over 1890. Wheat, which is still cut with a sickle, trodden out by horses and cleaned by the wind, also increased by 25 per cent.

In Manitoba, Canada, there were 18,937 farmers in 1891, each averaging 78.5 acres under cultivation. The average price of improved land is $10.85 per acre, of unimproved $6.96, the percentage of land taken up by settlers was 62.7, and the percentage fit for cultivation 74.8.

Russian grain crop reports continue to be conflicting, some sections reporting the winter wheat crop as unfavorable with a continuance of drouth, which is also damaging the grass crops, causing a lack of pasture. The Economic Society strongly urges the storing up of grain and fodder.

Gambier is the second largest vegetable product of the Malay peninsula. It is a most important tanning material, is used as a brown dye, as a medicine and in silk works. England imports gambier to the value of $2,300,000 annually, and our American imports are close to $1,000,000.

Dairying does not receive very much attention in Manitoba, partly owing to the long distances that cream and milk have to be hauled, partly to the unsatisfactory prices realized for the milk and partly to the want of factories and creameries. There were 80,000 milch cows in the province in 1891.

The last Egyptian crops of cereals, up to March 31st of this year, were: Wheat 5,472,000 bushels, beans 6,442,000 bushels, lentils 592,000 bushels, barley 1,445,000 bushels. Exports for the year, were: Wheat 3,442,000, beans 6,268,000, lentils 571,000, barley 1,262,000 bushels, the remainder being required for home consumption.

From Iceland the exports of wool last season were 1,310,000 pounds, of which 362,000 went to Great Britain, the remainder to Copenhagen. Exports of live sheep were 24,000, and of ponies 2,500. The hay crop was excellent, and fisheries were good, especially the halibut fishery which is carried on by Americans.

The newly-grafted American grape cuttings are doing well in Malaga, especially on low lands. They thrive well on alluvial soils, are free from any peculiar disease and give evidence of bearing abundantly; but on rolling or mountainous points the grafting has not been so successful, owing to want of moisture. There are 30,000,000 American cuttings set out, covering 4,500 acres.

In Corsica the citron is generally propagated from cuttings, though sometimes from seed; many cultivators holding that the latter system is the better as it does not degenerate the tree. The cuttings are about 16 inches long, taken from branches about a year old, with about half an inch of older wood at the base. After being raised in nursery they are planted out about 14 feet apart.

A French potato grower claims yields of 42 tons per acre. He plants the seed whole, cultivates deeply and manures liberally. He also immerses his seed tubers for 24 hours in a solution of six pounds of sulphate of ammonia and six pounds of nitrate of potash in 25 gallons of water, allowing the tubers to remain for another 24 hours afterward, so that the germs may have time to swell.

The Government of Hungary, at considerable expense, supports the development and improvement of the horse industry, aiming to increase the number of horses for home use and for export. There are 2,626 national stallions, and the government has power by law to castrate stud horses that are unsound or ill-formed. This supervision has produced good results in breeding more active and better stock.

Queensland wool growers have been cautioned against being too sanguine in regard to the possibilities of the United States as a wool market, the verdict of American manufacturers being that the wool from the warm climate of Queensland fails in the finishing process. The goods do not look well and are firm and harsh to the touch, the present demand being for a soft, silky feel in the fine goods made from merino wool.

At Prince Edward Island an excellent manure is obtained from the extensive deposits of mussel mud, formed by decayed oyster, clam and mussel shells. These deposits vary from five to twenty-five feet deep, their surface often being several feet below low water level. The manure is raised by machines placed upon the ice and worked by horse power, and is distributed over the fields while the snow is still on the ground.

Horses in Victoria have been suffering from influenza, the worst cases being among the hard-worked stock in overcrowded sheds with bad sanitary surroundings. Fat horses also suffered badly. The treatment recommended was rest, pure air, shelter from sun, rain or wind, bran mashes, cut green food with dram doses of chlorate of potash, carbonate of ammonia, or nitrate of potash given in the drinking water.

Prince Edward Island is fertile throughout, except for a few bogs and swamps, composed of soft, spongy turf. The soil is composed of a rich layer of vegetable matter on a stiff clay and sandstone, and is well watered. The principal crops are wheat, oats, barley, potatoes, and turnips, of which oats and potatoes are largely exported. Wheat yields 18 to 30 bushels, oats 25 to 70 bushels per acre, and barley makes a good crop.

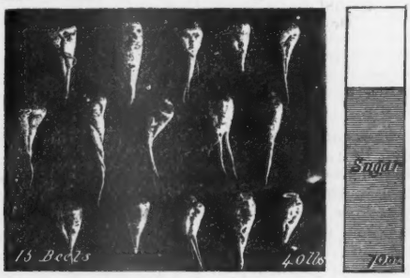
The warm valley and coast regions of the Republic of Columbia produce abundantly of coffee, cacao, bananas, sugar cane, indigo, cotton, tobacco, vanilla, corn, rice, beans, yucca and arracacha. In the middle region of the Andes, wheat, barley, oats, potatoes and all European fruits and vegetables grow readily. The wild flora is varied, especially in orchids. The forests abound in building, cabinet and dye woods, Peruvian bark, caoutchouc, sarsaparilla, vanilla, ipecacuanha, and many gums and resins.

The Wanghope dairy company of Jamberoo, New South Wales, manipulated 61,110 gallons of milk in March, yielding 28,620 pounds of butter, paying the suppliers 10½ cents per gallon. It has contributed toward funds for the export of butter $1,667, has no overdraft at the bank, no debts, and has a credit balance of $2,590. The Albion Park dairy company also paid 10½ cents on 30,251 gallons treated in the factory, and 12 cents on 31,362 gallons sent to the fresh food and ice company during the same month.

SCIENCE IN FARMING.

TREATMENT OF WEEDS.—Seeds for planting should be pure, that weeds may not be planted with the crop. Weeds are easiest killed while young, and, thus, further damage to the crops is prevented. Many weed seeds come from waste places and roadsides, the clearing of which is costly. C. F. Millspaugh, of the West Virginia station, published (B. 19) analyses of the common weeds, which show that a valuable fertilizer can be made by cutting all weeds found on or near the farm, and composting them. By so doing the farmer will gain the plant food of which the weeds have robbed the soil. In subsequent seasons the weeds will be decreased in direct proportion to the millions of weed seeds destroyed. If freed from weeds, the fields and crops will be easier tilled; the pastures cleaner with more room for good grass; the home will be healthier and more beautiful. Chemicals are not profitable weed-killers (B. 22). Many weeds make nutritious fodder but their bitter principles taint the milk and beef. None of the West Virginia weeds are worth cultivating for fodder. Two hundred kinds of weeds are described (B. 23); the economic, or medicinal uses, and the best known methods of eradication being given. Small, clear, original outline drawings are inserted in the text, which is thus made very plain to the reader.

SMALL BEETS FOR SUGAR.—Starch and sugar are stored in plants as a reserve of food for a rapid flowering and seeding. Abundance of warmth and moisture and fertile soil cause beets to grow with large leaves and roots. Sugar is stored while this luxurious growth is being

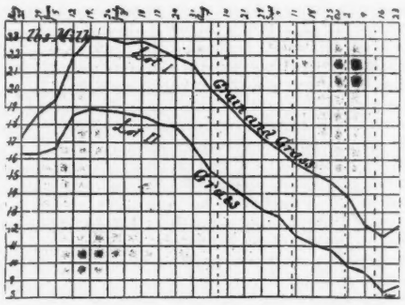


LARGE BEETS CONTAIN LEAST SUGAR.

checked by cold, or drouth, or crowding. H. A. Huston, at the Indiana station (B. 39), analyzed thickly and thinly grown beets and found that 15 large beets, weighing 40 pounds, contained nearly 70 ounces of sugar. Ninety-six crowded small beets weighed the same, 40 pounds, but contained 90 ounces of sugar. Not only is it very costly to work over the bulky material of large roots, but the factory cannot extract so much of the sugar content of large, as it can of small, beets. When sugar beets have three leaves, they should be thinned to four inches apart. Bounties should be estimated on the factory yields of the beets, not on their tonnage.

INTERNATIONAL STUDY OF GRAIN-RUST.—During 1892, the International Commission for the study of plant diseases will investigate the rusts of the cereals. The rusting of wheat, oats, rye, or barley may be due to either of three species of fungi, *Puccinia graminis*, *P. rubigo-vera*, and *P. coronata*, which have life-histories much alike. Each species passes through three forms of growth. On the leaves and stems of grain are formed in early summer the masses of reddish-brown spores which give the name "red-rust" to these fungi; these are followed later in the season by black or very dark brown spore-pustules, the "black-rust" stages; and the black-rust spores when they germinate, usually in the following spring, produce the third or "cluster-cup" stage, not on grain, but on another plant. The spores from the cluster-cups, in their turn, reproduce the fungus on the cereals, giving rise to the red-rust form, thus completing the cycle. The plants on which the cluster-cup stage is produced, are different for each of the three stages named. Thus *Puccinia graminis* develops its cluster-cups on the barberry; *P. coronata* on the blackthorn; and *P. rubigo-vera* on the borages. It is probable that all these species can in some way omit the cluster-cup stage, and propagate themselves by their rust forms from year to year. Information as to how this is accomplished is much needed. Some varieties of grains are evidently much less attacked by rust than others. Information which will lead to further knowledge is of great practical value and should be sent to J. E. Humphrey, of the Massachusetts station, at Amherst (C. 1892). Progressive farmers, gardeners and fruit growers can further their own interests by aiding this world-wide study of plant diseases.

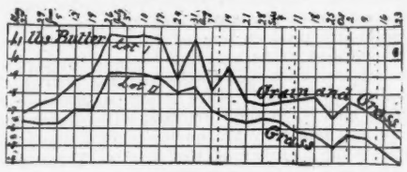
FEEDING GRAIN TO PASTURED COWS.—When the dry weather checks the growth of the grass in pastures, the cows greatly decrease in milk-flow. In such drouths, the feeding of grain to stock



MILK FLOW WITH AND WITHOUT GRAIN.

maintains the growth in size or weight. To ascertain the effect of a grain ration on cows at pasture, I. P. Roberts and H. H. Wing at the New York Cornell station (B. 36) have fed, for three summers, a mixture of two parts corn meal, one part bran, and one part cotton-seed meal, to Jerseys and Holsteins. Each cow was fed a gallon daily in two feeds, night and morning. In 1889, with good pasture through the summer, the grain-fed cows produced less milk and as much butter. In 1890, with good pasture, grain feeding did not increase the butter. In 1891, with short pasture, the grain-fed cows yielded enough more milk and butter to pay for the grain, but each grain-fed cow gained 28 pounds more flesh.

SILAGE FOR DRY CLIMATES.—As rains soak the food from half-dry hay and fodder, the burying of chopped green grass or fodder in closed pits or silos is a frequent resort in wet climates, the loss from fermentation of the silage not equaling the probable loss from rain-soaked hay. At the Utah station, J. W. Sanborn and W. P. Cutter (B. 8.) have found that the dry light air of the Rocky moun-



BUTTER YIELD WITH AND WITHOUT GRAIN.

tains cures hay and fodder with more food content than silage made of the same materials. Air-dried fodder corn proved more palatable to steers and sheep than corn silage, and made a more solid and better tasting meat. In dry climates, air-dried forage is less costly and more nutritious than silage.

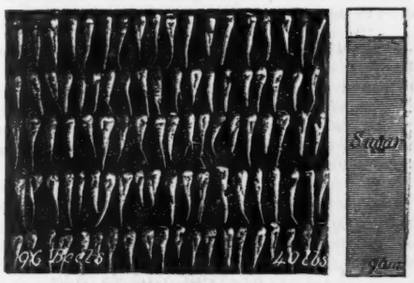
ROAD SURFACES.—Much work is wasted by the moving or packing of loose material on the road surface by the horses' hoofs or by the wagon tires. W. W. Carson reports to the Tennessee station (B. 3, iii) that the load which a horse can draw on an earth surface, can be made a third heavier on a graveled surface, four times heavier on a crushed stone surface, and nearly five times heavier on a planked surface. Poor roads are estimated to cost the farmer at least $15 a year for each horse. The aggregate loss would pay

ROAD SURFACE WITH MIDDLE CURVE.

for many miles of good road surface. Roads with a rounding surface, soon wear hollow in the middle and hold the water to make mud holes. The water will drain from the cross section shown in the engraving, which has straight lines for sides, rising one in 24, and a slight curve in the middle. The side ditches should be kept clean.

DRAFT OF MOWING MACHINES.—By connecting the double tree of farm implements with a tested coiled spring similar to the common spring scales, the draft may be measured in pounds. J. W. Sanborn, at the Utah station, has thus tested mowing machines (B. 7), and found that a six-feet cutter-bar drew easier per foot of cut than a four and one-fourth feet bar. A span of horses can draw a six-feet cutter bar at less draft than a plow turning an average furrow. An old machine, well repaired, drew easier than a new one. Razor-edge sickle sections drew one-twelfth easier than grindstone-sharpened sections. The draft was decreased one-thirtieth by the driver walking. A loose pitman box, a pitman rod not in straight line with cutter-bar, guards out of line, sickle sections not striking in center of guards, back edge of cutter-bar tilted upwards, or guards out of line, each increased the draft. A wheel at outer end of cutter-bar drew easier than a sliding support. Tough grass cut easier with a rapid motion of sickle.

MANGEL-WURZELS AND SUGAR BEETS.—That enormous crops of the large watery roots of the mangel-wurzel beet can be grown, but that the nutritious juices of the tender-fleshed, but equally hardy small sugar beet contain more food to the acre, is shown by the experiments of J. F. Hickman at the Ohio station (B. 2, V). Mangel-wurzels contain 90 per cent. of water, and sugar beets 85 per cent. About equal weights of dry matter (3,500 pounds) were produced per acre, but the mangel-wurzel contained only three per cent. of sugar. The globe mangels were more valuable than the long varieties. Fresh yard manure decreased the yield of mangels. Transplanted mangels were smaller and very costly. Continuous cropping with mangels for three years decreased the yield 10 per cent. each year. Silage made of the leaves was not relished by stock, and because of the large proportion of fertilizing elements in the foliage, it was found best to leave it on the field.



SMALL BEETS CONTAIN MOST SUGAR.

ROCKY MOUNTAIN INSECTS.—The table-lands and mountain valleys to the west of the Great Plains, are subject to several insect pests as injurious as the famous Colorado potato beetle. C. P. Gillette (B. 19) has studied the native fruit-tree leaf-rolling moths, the larva of which eat the young foliage of orchard and forest, and curl the older leaves with webs for hiding places. In this stage they can be destroyed by spraying with London purple, or Paris green. The grapevine leaf-hopper, and the Western currant and gooseberry span-worm are resisted by spraying with kerosene emulsion. All the gooseberries and currants stung by the fruit fly should be gathered and burned, as this insect is fast becoming a serious pest in the Missouri valley. All stems infested with the imported currant-borer should be cut and burned early in the spring. Insect powder and kerosene emulsion are recommended for the spotted bean-beetle and for the squash-root maggot. The weevils in ripe garden and field peas can be killed by the fumes of bisulphide of carbon in a tight box.

DOCK AND SMARTWEED FOR TANNING.—Many plants of the buckwheat family contain the astringent tannin which preserves hides as useful leather. The rosy smartweed, or tannin plant, has been cultivated in the Missouri Valley for this purpose, and F. A. Gulley, of the Arizona station, is experimenting with the Cañaigre dock, (B. 5) *Rumex hymenosepalus*, which grows in moist soil in the Southwestern United States and in Mexico. The roots resemble sweet potatoes, and grow in an upright cluster from three to twelve inches below the surface. The tannin extracted from the root has been used to make good leather, both in America and Europe.

Remedy for Wood Lice.—S. N. Merritt, Queens Co., N. Y., desires information how to rid a cellar, greenhouse, and other moist places of this pest. Scatter freely air-slacked lime wherever they frequent, and they will appear no more. Neither will earth worms or insects of any kind that find a home in moist earth. It will also purify the air, and musty odors will disappear from the cellar. A single application will destroy the insects, but several will be required to sweeten the atmosphere.

Navy Bean.—A. W. Beckwith, Maury Co., Tenn.: We do not know of any good reason why the Navy or Pea bean should fail to produce remunerative crops in Tennessee. It has long been successfully cultivated in nearly all the Northern and Middle States, and is likely to be in demand for many years to come. If planted in hills three feet apart, and eight seeds in a hill, eight quarts will be required per acre. When sown in drills, a little more seed will be required. The usual yield on good land is from 15 to 20 bushels per acre. There is always a good demand for this bean, and, unlike potatoes, to which you refer, the bean is readily kept in sound condition for a year or two, if the price at harvest time or the following spring does not suit you, provided, however, that the bean-weevil is not in your neighborhood to attack the crop in the field.

Protecting Vines from Chickens.—J. T. Barker, Berrien Co., Mich., writes: Hills of melons, cucumbers, and other plants, may be kept from chickens, and saved from being tramped on by covering with brush, or by loosely cording some sticks of firewood over the hill. The sticks need not be removed until the plants are well grown.

Improving Prairie Roads.—Subscriber, Des Moines Co., Iowa: Roads through the bottom lands of prairie streams may be much improved by turnpiking with a good road machine, and cutting down the side ditches through high points so that the rains will be rapidly carried off. The road should be thoroughly rolled after grading, and afterwards the road machine and roller should be used to level ruts. Hollow places should be filled with earth as soon as they appear, and in wet weather mud holes may be much improved by filling with earth or straw. Approaches to bridges need attention soon after heavy rains. The formation of bad holes and ruts may often be prevented by a little digging. The road overseer should patrol the roads after every heavy rain storm.

Planting Plum Trees.—F. B. Davison, Mecosta Co., Mich.: We fear that any advice we might feel inclined to offer in regard to the selection of varieties and the planting of plums would reach you too late to be of service for this season. Presuming that the trees will be planted before you read this note, we will only suggest that neither weeds nor grass be allowed to grow within at least four feet of their stems during the present season. If the soil within this circle is carefully hoed or stirred with a steel rake once a week, it will assert much in inciting them to make a vigorous growth. The trees should have been headed back at the time they were planted, and if this was neglected, do it now, that is, shorten all the young shoots of last year's growth to one-half their original length, unless the trees are only one year from without lateral shoots, or what would be called a head. If they have only a single stem, then only a few inches of the top should be cut off.

Asphalt for Roofs.—J. C. Schey, Perry Co., Pa.: There are many roofing compounds sold under the general name of asphalt. In quality and composition they vary all the way from common coal tar to the genuine article. Asphalt for roofing purposes is often a tar-like compound applied upon the top of so-called roofing felt. A good quality is much better than an ordinary pine shingle roof. While it lasts it is tight, whereas a shingle roof is usually rather leaky from the beginning till the end of its life. Genuine asphalt cannot be successfully applied without special instruction, and there are tools required not usually to be found in country places. With roofing felt for a foundation, which, by the way, is saturated with asphalt, it will stand the New York climate in a satisfactory manner. There is little cracking, even upon the sidewalks, where the surfaces are larger than upon roofs, and where there is no felt foundation. The prices vary in different places, and can be obtained by corresponding with the manufacturers whose advertisements appear in the AMERICAN AGRICULUTRIST. Most dealers in asphalt and roofing tar supply special compounds, and are prepared to answer the commercial questions. In comparing a roof laid with shingles with one covered with other materials, the difference in the quality of the roof should be considered. The remark is often heard that such and such a roof of shingles is 30 years old, and is in fair condition. Generally a careful examination will show that the roof is only moderately tight. If a felt, tar, gravel, or tin roof showed as many leaks, it would be condemned as utterly worthless. The shingle roof is not expected to be very tight, and, therefore, it lasts a long time in a condition which really should not be tolerated. The fact that the composition roofs are, most of them, fire proof is greatly in their favor, and should receive attention in considering relative advantages.

Illinois at the World's Fair.—The State Board of Agriculture of Illinois has offered prizes aggregating $6,450 for county exhibits, of the State Fair in September, 1892, of cereals, grasses, forage and textile plants, fruits and vegetables. The entry rules permit the winning of nine large cash prizes, and all counties making displays may receive $50 each for their exhibits, besides the premiums. These exhibits will become the property of the State, and from them will be selected the State display of Illinois at the World's Columbian Exposition.

Fasciated Asparagus.—Mrs. J., Essex Co., N. J.: The immense flattened stalks of asparagus, which you have occasionally found this spring, are not at all uncommon, and indicate nothing more than a natural freak among such plants. Such stems resemble a bundle; hence, the name fascicle, fasciate, or fascicled, because growing in a tuft, or bundle, as though bound together. Such monstrous growths occur among many cultivated plants that have been forced by stimulating manures and high cultivation for many generations. Beets, carrots, parsnips, and similar roots, when set out in the spring for raising seed, will occasionally produce one of these fasciated or fascicled seed stalks, and many superstitious persons who are always on the lookout for wonderful signs of something dreadful to happen in the near future, look upon such growths with dread, because to them they are omens of evil likely to strike some member of the family. The experienced and intelligent cultivator of plants view these monstrosities as the result of high cultivation and domestication, and not portentious signs of an avenging nature.

Layering Shrubs.—S. D. Michaels, Champaign Co., Ill.: The best season for layering vines, shrubs, roses, and similar plants, is early spring, but it will answer later, and even in midsummer. Cut away the lateral twigs on the part of the branch that is to be covered by the soil after the layer is placed in position. With vines such as grapes, wistarias, and honeysuckles, it is not necessary to cut notches or make a tongue on the part of the branch covered because roots are produced very freely without it, but with magnolias, Japan maples, and most kinds of hardy roses, the inner wood should come in contact with the soil, either through notching, tonguing, or twisting the branch until the bark is partly broken. Layers put down early in the season will usually produce roots enough to admit of separating from the parent plant in autumn, or early the following spring. Vines of nearly all kinds are readily and rapidly multiplied by layers.

Oats, Barley and Alfalfa.—W. V., Barryville, N. Y.: On a poor, sandy loam, such as you describe, you would need a heavy dressing of commercial fertilizers to insure a good yield of either oats or barley. We cannot single out any special brand of fertilizer among those advertised in our columns, because all are standard products, but we feel certain that all are worth the price asked for them. Some are manufactured specially for cereal crops, others for vegetables, or root crops, as described by their manufacturers and agents. The same brands, as used for grain, will also answer for Canada peas. There would be little use to sow alfalfa on rich bottom land for permanent meadow in your locality, because the roots would probably be lifted out by frosts in winter, or rot from excess of moisture. Alfalfa is a plant best adapted to warm, dry climates, and where irrigation is practiced. The roots are large and fleshy, soon decaying, if subjected to an excess of moisture while in a dormant state, as during cool or cold weather.

Troublesome Ants.—G. D. T., New York city: The ants that are so troublesome to your correspondent's pineapples, in Cuba, might, possibly, be poisoned with Paris green or London purple. We would suggest cutting up ripe pineapples into thin slices, dusting these with the poison, and laying them among the growing plants. Use every precaution to keep the poison from the ripening fruit. Some strong-smelling fertilizer on the surface of the ground might drive away the ants, or an application of coal tar, mixed with enough sand to allow its being easily distributed, would answer the purpose.

Bluegrass Pasture.—Subscriber, Elmira, Mo.: The best way to renew an old bluegrass pasture would be to break it up, and use the land for corn or potatoes for a year or two, and then seed down again with grain. But, as you say the land is too rough and hilly to break up, perhaps you can improve the pasture by giving the sod a good scratching with a sharp, steel-toothed harrow, then sow on fresh seed, and topdress with fine manure, or some good commercial fertilizer. An application of lime might be beneficial, but we think the harrow and a topdressing of manure will give the best results.

Chess or Cheat.—James R. Gamble, Tangipahoa Co., La.: The tall, handsome grass which you found growing so luxuriantly in your strawberry bed is the well-known chess, or cheat (*Bromus secalinus*), of northern wheat fields, and perhaps common in those of the South. Unfortunately, this grass is an annual, and, if grown for hay, it would be necessary to sow the seed in the fall, and about the same time that wheat is sown. It has occasionally been cultivated for spring pasture and hay, and, some 30 or more years ago, it was highly extolled as a new grass, under the name of "Willard's Bromus," and the seed sold at a high price. We think it probably worth cultivating at the South for winter pasture, but we would not advise you, or any one else, to introduce it in regions where winter wheat is cultivated, because it is a pest in wheat fields.

Pickling and Drying Beef.—E. L. Morgan, Pulaski Co., Ark.: For pickling, beef should be first placed in a weak brine, to soak out the blood, letting it remain in this for about one week. Then for each 100 pounds of meat, prepare a brine, made of eight pounds of salt, two pounds of sugar, two ounces of saltpeter, two ounces of black pepper, and six gallons of water. Boil and skim the brine, and then, while warm, pour over the meat, which should have previously been firmly packed in barrels or casks. If at any time the brine should begin to smell bad, draw it off, scald, and skim as before, and return it. This recipe will answer equally well for pork, adding a little more salt. Set the barrels in a cool cellar, if you have one. When the beef has become well pickled, it can be taken out, cut into strips or convenient-sized pieces, and hung up in any garret or outbuilding, to dry, but it should be protected from flies and other insects by having the windows covered with mosquito netting or wire screens. Of course, if drying is to be done in winter, then a kiln or a room with a fire will be required.

Exhibitions of Weeds.—"A few dollars expended in awards by each State and county fair association would bring together lists of plant pests," writes Prof. Byron D. Halsted, in the *Popular Science Monthly*, "that would not only surprise, but greatly instruct, those who see them." It is not less important for the farmers of any district to know of the arrival of a new weed than of the advent of a new fruit or grain. Space at the World's Columbian Exhibition has already been

set aside for a display of the weeds of the whole country, and the space will be filled. "To put a map of a dozen of the most destructive weeds upon the walls of every country schoolhouse in the United States is a great undertaking," writes Prof. Halsted, "but, if it were done, the next and succeeding generations of farmers would be better able to carry on the work of extermination." There are a large number of farmers' clubs throughout the country, and a great deal might be done by hanging a weed chart upon the walls of those halls where farmers gather, from time to time, for mutual improvement and a better understanding of the ways and means of a more profitable agriculture. In Germany they have wall maps upon which the leading weeds are represented, and children learn the appearance and names of the pests. Most of our weeds have come from foreign lands. These European weeds, adapted, through long ages, to the change from forest to cleared land, flourished in the rich forest soil of New England and all along the Atlantic seaboard.

Cider Vinegar.—J. L. Elliott, Northampton Co., Pa.: Cider stored in a cool cellar will rarely change to good vinegar, because the low temperature prevents the fermentation required for the production of acetic acid. Remove the barrels of cider to the open air, and place in a warm position, near some outbuilding. Nail a piece of wire gauze over the bung hole, or close it by placing an inverted bottle in it, to keep out flies and other insects, and, at the same time, admit air. If the cider is very rich, a little rain water may be added, or, if you can get it, a gallon or two of old cider vinegar to each barrel, or a few sheets of mother-of-vinegar. A few weeks' exposure to the warmth during the month of June and July will usually cause fermentation and a change to good vinegar. In the fall remove the vinegar to a warm, dry cellar, or a room where it will not freeze during the winter. Any one intending to manufacture vinegar will find in Trowbridge's *Cidermaker's Manual* a most valuable guide.

Timothy Hay.—C. H. Walker, Pennington Co., Dak.: If you bale timothy hay direct from the cocks or windrows in the field, we think it would sweat and become musty—at least such would be the result here; but, in Dakota, you may be able to cure hay so thoroughly in the field that it will not sweat in the bale.

Glover's Samia. — H. G. Toussant, Sierre Co., N. Mex.: The large gray and brown moth you send, and which was received in fragments, is *Samia Gloveri*, Strecker. Mr. Hermann Strecker, the widely-known lepidopterist, of Pennsylvania, figured and described this beautiful moth, in his elegant work on *Lepidoptera*, published some 15 or more years since. This species was named for the late Townend Glover, who for many years was connected with the Department of Agriculture, Washington, D. C. It is a native of the far Western States and Territories, and its larva is said to feed on the currant and gooseberry, and is similar in size, habits, and appearance to the larva of its near relative, the cecropia moth (*S. Cecropia*), of the Eastern States.

About Clovers.—A. S. Terrill, L. Isl., N. Y.: The large peavine clover is the best variety to sow for green manuring, or plowing under as a fertilizer, because it grows larger than the common red clover, or the Italian Scarlet. But we very much doubt if you will be able to get a good stand of plants from seed sown in July or August among corn. The time to sow clover seed is early in spring and before the time arrives for planting corn. You might sow buckwheat, or even field peas among your corn for the purpose of raising a crop to plow under late in the fall, but we do not think you will succeed with clover, under such conditions.

Composting Leaves.—John W. Lyon, Crawford Co., Mo.: As a rule, farmers do not take kindly to the idea of gathering forest leaves for manure or compost, because of the large quantity or bulk of fresh leaves to make one good load of manure when they are thoroughly rotted. Having had considerable experience in this line, we know how soon a great heap of fresh leaves sink down to a very small one, and the leaves are of no value as a fertilizer until they are decomposed. There can be no question as to the value of leaves as a fertilizer, but there may be a doubt as to the economy of spending one's time in gathering them from the forest for this purpose. They certainly make an excellent bedding for stock in winter, and will aid much in enlarging the manure pile, and this, we believe, is the best way to compost them, gathering the leaves in the fall, storing them in a dry place, then throw them into the stable as wanted; they make an excellent absorbent of the urine, and their nutrient properties are added to output of the stable. But every farmer must be his own judge as to whether he can afford to gather forest leaves for such purposes or not.

Onion Sets.—E. McGrath, Macon Co., Ill.: It is certainly too late for sowing onion seed for raising sets this season, but, as you refer to the mode of gathering, we presume this operation is the one which interests you most at this time. The sets, if the seed has been sown thick enough, will probably be ready for harvesting sometime in August, the dying and shriveled leaves indicating ripeness. The bulbs may then be raked or hoed out, and left on the surface of the ground for a few hours; then gathered up and spread on the floor of a barn, or other building, until thoroughly dry; then they are ready for storing in some dry, cool place, such as a barn loft, mixed with chaff and spread out in a layer four to six inches deep, and left in this position until the approach of cold, freezing weather, then covered with about six inches of hay, or straw, and, in this condition, they may be left undisturbed until spring. Freezing will not injure them if they are left to thaw out in the shade.

Wild Rice and Lotus.—W. A. Wheatly, Shelby Co., Tenn.: The best grass to sow in low marshes, or around the borders of shallow lakes, to provide food for wild fowls, is our native Indian rice or Water oats (*Zizania aquatica*). This is a very strong and vigorous growing grass, and may be found in many deep marshes and ponds from Florida, and far northward about Lake Superior. Wherever it grows, there the wild water fowl usually congregate during the autumn and early spring. Wild ducks, geese, and many other kinds of birds, feed on the ripe grain, as well as on the sprouting seeds and leaves in early spring. The seed is offered by our leading seed houses. The native yellow lotus (*Nelumbium luteum*), or water chinquapin, is readily raised from seed. The seed should not be taken from the top-shaped seed vessels until fully ripe, and then sown in the pond where they are to grow. The seed, however, may be kept in good condition for several weeks, or months, but it is better to sow them in the fall than to keep them over until spring.

Planting Walnuts. — Minnie Lewman, Clarke Co., Ind.: We are not quite certain as to what species of nut-bearing tree you refer, under the name of "Walnut," because, in some localities, the common hickory nut is called walnut, or white walnut; then we have the black walnut, and European walnut, or Maderia nut; but we may safely say that all may be raised from the nut in the same way. Get the fresh nuts in the fall, and plant them in drills, covering about two inches deep. Drop a nut every five or six inches in the row. If you do not care to plant the nuts in the fall, mix them with about equal bulk of sand or light loam, and bury in a box or a hole in the ground, covering five or six inches deep. The next spring take out the nuts and plant in rows, as directed above. Give good cultivation, and, when a year old, transplant to other nursery rows, cutting off the lower half of the taproot at the time of transplanting. When the trees are four or five feet high, transplant to your orchard.

Hickory Shuck Moth.—Subscriber, Alton, Ill.: The small, slender white worms which you found so destructive to the pecan nuts last year are the larvæ of a small, dark colored moth now known to entomologists as *Grapholitha caryana*, Fitch. This insect is usually referred to under the common name of the "hickory shuck moth," a name given it by the late Dr. Asa Fitch in 1856, specimens having been sent him in that year from Easton, N. Y. These worms bore into and mine the half-grown hickory nuts usually confining themselves to the shucks, but sometimes enter the shells of the immature nuts, but in either case the nuts are checked in their growth, and many fall to the ground long before they are ripe. Although abundant in all of our Eastern States, the depredations of this moth are scarcely observed because little notice is taken of the hickory nut, crop, while in the West and South a failure of the shell barks and pecans is quite a loss to the owners of the trees, as well as to many poor people who make a little money by gathering nuts from the forest. So far, no practical way has been found to destroy this pest of the hickories.

Wild Wheat Grass.—W. A. Taylorville, Salt Lake Co., Utah: The grass sent is called in Nebraska the "Wild Wheat Grass" (*Agropyrum glaucum*). In some places it is known as "Colorado Blue-stem"—not a bad name, while in some localities it is called "Blue-stem," "Blue-joint," "Blue Grass," etc. It bears many other names, also, but none of them are as applicable as the first given, as it is a near relative of the common wheat, and may well bear the name of wild wheat grass, or simply wheat grass. All through the West it is a valuable grass, especially in the higher regions. In Nebraska above 2,500 feet elevation from sea level it is a most useful forage plant. Dr. Charles E. Bessey is of the opinion that wheat grass is destined to be one of the standard forage plants of the elevated regions of the West, and that it will repay careful attention and selection.

Bordeaux Mixture of Lime and Sulphate of Copper.—O. G. Markley, Rutland Co., Vt., and other subscribers: The United States Department of Agriculture (F. B. 7) recommends the following preparation of the Bordeaux mixture for spraying diseased plants: In a barrel that will hold 45 gallons, dissolve six pounds of copper sulphate, using eight or ten gallons of water, or as much as may be necessary for the purpose. In a tub or half barrel slake four pounds of *fresh* lime. When completely slaked, add enough water to make a creamy whitewash. Pour this slowly into the barrel containing the copper sulphate solution, using a coarse gunny sack stretched over the head of the barrel for a strainer. Finally, fill the barrel with water, stir thoroughly, and the mixture is ready for use. If the copper sulphate costs seven cents per pound, and the lime 30 cents per bushel, the cost of a gallon of this mixture will not exceed one cent. Fresh lime must be used, and the copper sulphate will dissolve more readily if powdered.

Bog-Rush.—J. A. F., Kent Co., Del.: The plant you send for name is not a true grass, but belongs to the *Juncaceæ*, or rush family, all of which are worthless as forage plants, being hard and woody, containing no nutritive properties of any special value. The species you send is the *Juncus acuminatus*, and is common in all peat bogs and on sandy borders of ponds. We do not know that it has any special common name, but this, with 50 other indigenous species, pass under the general English name of "Bog Rush." It is a pest in low meadows, as it crowds out the true grasses, and, for this reason, the sooner you destroy it the better.

Mountain Ash.—Ellis Lewis, Pike Co., Pa.: The small tree, from which you send a twig and flowers is the European mountain ash or Rowan-tree (*Pyrus aucuparia*). It differs from the American species of the genus by its polar leaflets and downy leaf stalks and buds, as well as in its larger fruit. There are many species and varieties of the mountain ash, and all are well worth cultivating for ornament. Some are trees growing 30 feet high, while others are but small shrubs, rarely more than three or four feet high.

Red Rust Fungus. — Subscriber, Passaic Co., N. J.: The leaves of the blackberry you send are infested with the now common and widely distributed disease known as the "red rust" of the blackberry and raspberry. The wild plants by the roadside and in old fields are the fruitful source from which this fungus finds its way into our gardens and cultivated plantations of blackberries and kindred fruits. If this fungus becomes established in a plantation it spreads from plant to plant by means of the spores, and the best way to prevent its spreading is to dig up and burn every infested plant as soon as it is discovered. At present we have no law that will compel any one to do this; consequently, we can only combat the disease as it appears on our own grounds while our neighbors may allow it to run riot, and cause us much unnecessary annoyance and expense. Like many other diseases of plants, this red rust only flourishes in plantations overrun with weeds, or in other ways when not given proper care and attention.

ANIMAL AILMENTS.

Nodular Disease of the Intestines.

GEO. JOBSON, V. S.

The cause of this disease remained in obscurity until the winter of 1889, when, by the investigation of Drs. D. E. Salmon and Cooper Curtice it was discovered that the nodules contained an embryonic worm called the *Oesophagostoma Columbianum*, called so by these gentlemen from the fact that it was first seen and described in the District of Columbia. The disease has heretofore been described as existing east of the Mississippi, and north to Maryland. But having seen and thoroughly investigated it in this section of Northwestern Pennsylvania I think that its limits are not confined to any part of the United States. It is not from the death of the sheep alone that loss is occasioned, but also from destruction of the intestines, rendering them useless for sausage casings. The latter may seem a trivial matter, but it is not to the sausage maker, when we remember that a great many casings have to be imported. The symptoms are as follows:

Appetite diminished, and as the disease progresses, the animal will stop eating entirely. Visible mucous membrane—lining of nose, mouth, eyes, etc.—pale and bloodless, pulse weak, drowsy appearance, and not able to keep up with the rest of the flock when driven. Diarrhœa ensues, the excrements having a thin, tarry appearance and fœtid odor. In some cases a grating of the teeth with froth issuing from the mouth, caused by the abdominal pain. The animals lose flesh rapidly and succumb in a short time, if the parasites are numerous. In other cases they recover, if they live until the worms mature and pass away with the excretions.

The disease is best developed in winter or early part of spring. In *post mortem* examinations, after removal of the skin, the tissues will appear paler than normal, and upon opening the large intestine from the rectum to the cæcum or blind gut, will be noticed the tarry fæcal matter before referred to, sometimes containing a small worm from a half to an inch in length, but more frequently found attached to the lining membrane. This is the mature *Oesophagostoma Columbianum*. In some cases I have been unable to find the above parasite. But in these cases the tumors were more numerous than in those containing the mature form. This leads me to think that the great number of tumors containing the embryo, caused death by functional disturbance, before the embryo matured. The characteristic nodular tumors, from which the name of the disease is derived, are found throughout the course of the intestines and omentum. They vary in size from a millet seed to a pea, and, when opened, a greenish mass may be squeezed out. This mass contains the embryo which is very small and requires a magnifying glass and great care, in order to detect it. The stomachs often contain undigested food, from suspension of the digestive functions, the gall duct is distended with bile secretion, and the liver pale and soft.

At present no medicinal remedy can be well recommended for removal of the worms, as they are buried in the secretions and attached to the mucous wall. However, benefit may accrue from giving tonics, pure water, and good stabling; trying to support the animal until the worm matures and passes away. In order to rid the flocks of the pest it is advisable to change the pastures, provide good, running water if possible, and a plentiful supply of salt. If known to be permanently infected they should be plowed, if practical on small farms, or turned over to other stock for a year or two. The object of these preventive measures is to destroy the parasites, the eggs of which are taken with the food and drink. Judicious fall and winter marketing of infected sheep, will lessen the chances of infection.

Sundry Inquiries Answered.

Common Colds.—A. B. H., Minneapolis, Minn.: Neglect to treat a common cold in flocks or herds frequently lays the foundation of incurable diseases. A common cold, a nasal catarrh, or coryza are one and the same, only under different names, and they promptly yield to a clean, warm, well-bedded stall, a drink of bran, or flaxseed tea, a warm blanket, a good grooming and a day or two of rest and care. This common cold is an inflammation of the delicate mucous membrane that lines the nasal air passages. It is what we suffer with a cold in the head, and because it is merely a cold we neglect it. But this same mucous membrane lines all the air passages to the minutest air vesicles, of which physiologists tell us, there are 600 millions in our lungs. And this acute inflammation of the membrane has a dangerous tendency to travel down to these minute and delicate vesicles, when neglected, or to terminate readily by proper attention, to perfect health. A neglected cold, leaves this delicate membrane weaker after every attack, and thus more liable to suffer from still slighter exposure, ever after. It is wise to attend to a common cold in time.

Slobbers—Salivation.—Salivation in horses is a source of much annoyance. Some horses are so much affected that to harness or unharness them is a source of filth. Rank, watery grass, musty or mow-burnt fodder, lobelia, mild mustard, colchicum, pepper, garlic, ginger, irritants, caustics, mercury and irritating bits are the general causes. The treatment is easily affected by the removal of the cause. Removal from pasture in summer for a day or two at a time abates the annoyance to man and beast; but in more obstinate cases, caused by baneful medication, dry food, small doses of opium and flaxseed, the external application of tincture of iodine beneath the ears and under the jaws, as a counter irritant and alterative, will generally suffice for a speedy and permanent cure.

Drooping St. Bernard Dogs.—Silvester Schmitberger, Lewis and Clark Cos., Montana, writes us that year before last he visited Switzerland where he purchased a pair of St. Bernard dogs. He has bred them and now has five pups. All of them are dull. They sleep most of the time out of doors. During the prevailing chinook winds, they are particularly indolent. The four-year-old male carries his head sideways and frequently shakes it. It was supposed that the Northwest would be a suitable climate for the noble breeds of dogs of the cold high latitudes of Europe, but this statement proves otherwise. All domestic animals too closely inbred, have not only debilitated constitutions, but an inheritance of disease, and the tendency to take on disease, while low-bred or mongrel canine races are remarkably exempt. The St. Bernards do not live long nor thrive well in Southern New York. The English mastiff does far better in all respects, but even he is liable to cancer. The shaking of the head is indicative of *canker oris* ulceration of the tissues of the ear, and if not promptly treated with weak solutions of chloride of zinc—two grains to the ounce of water—the ulceration will extend to the deeper tissues of the ear and result in deafness.

Diseases of Animals Unlike.—A. V. Jacobs, Cleveland, Ohio, asks if the same remedies for horses are not also as suitable for all other animals? His experience and practice has been confined to horses. Heretofore, veterinarians have principally studied the diseases of horses, and have too much ignored the other domestic animals that are even more numerous and more valuable. Human practitioners have generally fallen into a similar error, asserting that animals require the same treatment and medicines that human patients require. Man is so different from our domestic animals anatomically, physiologically, and pathologically, that the same rules of treatment must be varied in each class of animal, according to its peculiarities of structure and functions.

High Blowing.—Thurston T. Smith, Detroit, Mich., has a saddle horse that is in every way perfect in his estimation, except one: "He has a strange fashion, or disease, of flopping his nostrils at a gallop. His health and spirits seem perfect. Can it be cured?" It is probable that the horse has large, thin nostrils, and this is an evidence of good lungs and good wind. If the annoyance is of sufficient consequence, get a pair of stiff rubber rings large enough to fit and remain in the nostrils. They should be light, and if the rings are filled with air, they will be better. But rubber sometimes chafes the nostril, in which case, it should be covered with thin kid or bladder. This should be cleansed when removed so as not to irritate or annoy the horse. After being used for a few times, the annoyance will cease. It is possible that spraying the nostrils with a solution of ferric alum, ten grains to an ounce of water, may remedy the difficulty without resort to the rings. The rings will, however, remove the annoyance. It is sometimes a mere habit of the horse.

Sitfasts.—S. Miller, Essex Co., N. J.: These are swellings that have become indurated by long pressure and chafing. The skin has become thickened, hard and partially dead. The circulation of blood is feeble and scant, and only maintains life by a small attachment to the sluggish living tissues. The proper remedies are the knife, or caustic, to remove every particle of this semi-dead tissue and to stimulate the healthy or rather living tissues to cast off the least and last particle of this diseased tissue. This may be best accomplished by, biniodide of mercury one dram, sand one pound, thoroughly rubbed together, and applied on the tip of a feather.

Difficult Calving.—A subscriber in Burks Co., Pa., had a heifer that had a tedious labor with her first calf. There was no apparent malformation, or wrong position, but with all the suffering no advance was made. Pity determined humane assistance. It was a dark, stormy night and no veterinarian was within many miles, and, though our subscriber dreaded and felt annoyed at the idea, yet, humanity finally prevailed. No advancement was made, however, by all the safe effort he could use. By further examination, the nose was pushed and did not advance by traction. Holding the feet, the head was pushed gently back and in less than two minutes the calf came into the world all right. This proves how a little humane assistance can save poor dumb brutes much suffering. The anxious lowing expressed the agony, and, after, the expression was that of gratitude.

Vaccine and Vaccination.—S. T. R., Philadelphia, Pa., desires the following information: 1. "Does inoculation of a cow with the matter of smallpox produce smallpox?" Most certainly it will. 2. "Does inoculation of the cow produce smallpox from vaccine virus?" Certainly not, but the vaccine disease, which is modified smallpox, produces a milder but protective disease. 3. "Will vaccination prevent any other disease besides smallpox?" It will not. Some theorists have thought that the vaccine disease was a preventive against pleuro-pneumonia, foot and mouth disease, rinderpest and hog cholera. But theory is one thing and proof positive given another matter.

Nervous Twitching of Neck.—D. L. L. has a mare running at pasture on bunch-grass, with other horses, which for a time every morning swallows, slobbers and has twitchings of the neck, rubs her nose upon the ground, seems relieved for a time and then there is a re-occurrence of the nervousness. This passes off in ten or twenty minutes till the next morning. None of the other horses are at all affected. With this description it is difficult to diagnose the case satisfactorily. There is some temporary irritation of the throat, and a careful inspection of the nose and mouth should reveal the cause. If any marked annoyance results, it will be advisable to remove her from the pasture and observe the result. The case is so curious as to excite a desire to learn the cause. Sometimes poisonous and irritating herbs cause trouble, but do not show such peculiar periodicity. Let us learn the result of a careful scrutiny of the case.

Lameness from Dry Hoofs.—P. Bronta, Humbolt Co., Iowa, has a horse that is lame from dry, hard hoofs. Remove the shoes and turn the horse to pasture. Wash the legs and hoofs with soap and water, and when dry smear the entire hoofs with a mixture of equal parts of tallow and tar.

Enlarged Joints of Chickens.—E. L. Taylor, Orange Co., Fla.: The half-grown chickens which have enlarged joints, that can scarcely walk and that through this trouble finally die, seem to be suffering from a complication of diseases. The best remedy, perhaps, is the hatchet and a new set of chickens, but if sulphur be given in the food and the joints bathed in some stimulating liniment—say St. Jacob's Oil—some help may be afforded. Without knowing further particulars, we cannot fully advise as to the best remedy.

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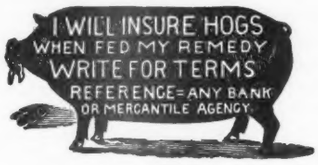

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AUGUST, 1892.

The Beet-Sugar Industry.

The articles recently published in the AMERICAN AGRICULTURIST on the possibilities of the beet-sugar industry in this country have attracted very universal attention among both agriculturists and capitalists, and were extensively quoted by our own and the foreign press, especially in sugar producing and manufacturing countries.

We see no reason to change any of the conclusions therein set forth, nor to alter our opinion as to the ultimate success of beet-sugar production when conducted on a large scale and in a business-like method. It only remains for farmers and capitalists to determine just what that method shall be, and just what location is best adapted and available for the purpose.

Up to the present time the manufacture of beet sugar has been conducted in a somewhat expensive manner, as far as the factories are concerned. These have been costly structures involving an outlay of several hundred thousand dollars in each individual establishment. Such an outlay, giving an output of about one thousand tons of sugar, naturally tends to check the rapid advancemen of the business, and it would seem advisable to try and secure just as large and satisfactory manufacturing results with smaller investments.

This, we believe, is done in Germany, where small factories, costing about $50,000 each, are erected throughout the agricultural districts wherever the soil and climate are well adapted to the successful culture of the beet. In such factories the business is confined merely to the manufacture of raw sugar which is sold to the home refineries, or shipped abroad to British and American refineries. It is claimed that by this method, and this method only, can the manufacture of beet sugar be profitably accomplished.

With us the opposite has been the case. The factories have been constructed more elaborately with a view to turning out a refined sugar product for direct sale to the consumer. It is only reasonable to suppose that such a product can not be of as good marketable value as the product of an extensive sugar refinery, built at ten times the cost and specially equipped for the purpose, alone, of refining sugar. As a matter of fact, too, such is the case, and the so-called refined product of a beet-sugar factory does not bring as much money in the open market as the output of a refinery proper.

It would, therefore, appear most advantageous, both from the standpoint of the business man as well as that of the agriculturist, that the cheaper factories should be erected. This will enable us to have more of them, with a larger output of sugar for the same investment of capital, consequently receiving a larger amount of government bounty, and paying a better return on both beets and capital. It will then be necessary to sell the raw product to one of the numerous existing refineries, which will always be ready to purchase it at the market quotations of the day. While the actual cash returns would be smaller for the raw than for the refined sugar, the percentage of profit would be larger for each factory, and the aggregate profits on a similar investment would be materially enhanced.

All things considered, we are inclined to believe that it will be best in the end for the beet-raising States to confine their share of the business to an agricultural basis, growing the beets and making the raw product, leaving the work of refining to those who are engaged therein as a special business and have properly equipped establishments for its conduct and successful management. A combination of the two might well be compared to the efforts of a farmer to both grow his own wheat and place his own flour on the market in competition with the product of well-organized flour mills. For the present, at any rate, the methods that have succeeded so well in Germany, where the culture of beet sugar has been reduced to a science through many years of practical experience and experimentation, might best be followed in this country.

The proper plan is for beet-growers to unite with others in furnishing the capital for each plant, net receipts to be equitably divided between beets and capital, as we have always advocated. These various plants might in time coöperate to lease or own a sugar refinery, its earning to be divided in like manner. This would in large measure protect both producers and consumers against attempted exactions of the sugar trust. It would also insure the farmers' interests and secure a supply of beets of good quality.

Farmers and capitalists both West and East are carefully investigating this new field of industry, and we hope soon to chronicle an actual beginning on the lines marked out by the AMERICAN AGRICULTURIST.

The Outlook.

The government crop report, as prepared and interpreted by the AMERICAN AGRICULTURIST, indicates a year of average but not abnormal productiveness throughout America. Foreign advices indicate a much better crop of food staples than last year in Europe, but nothing extraordinary. With the depleted European resources caused by the Russian famine, an active export demand for America's surplus of food products is practically certain. It is of course too early to measure the extent of this demand, but with the decreased production of wheat, corn and oats in the United States this year compared with last, there is every reason why good prices should be expected. The cotton situation grows stronger daily and a marked decrease in the 1891 crop in the United States and India is already an accomplished fact. Fruit crops are not overlarge, and there is every promise of satisfactory returns for winter apples.

Up to this time (July 18) there is therefore no reason to expect any severe reaction in the demand and values for the produce of America's farms. While the season opened unfavorably with prolonged rains, the reduced product will probably net more actual money than larger yields would bring to the farmers, and an easy money market at this time is also a factor of no mean importance in gauging the fall and winter prospects. Labor difficulties, though severe in a few instances, are not general. Nor is there as much business uncertainty at the present time as usually characterizes the midsummer of a presidential year. Caution and prudence prevail in the commercial world, and while there is little probability of a boom, there is less prospect of material stagnation in business. This with the foreign situation and our enormous export trade augurs well for the future. Our exports of wheat and flour, as wheat, for the fiscal year ended June 30, 1892, closely approximated the AMERICAN AGRICULTULIST estimate last fall of 225,000,000 bushels.

Two Notable Features.

It is not our policy to exalt any feature of the AMERICAN AGRICULTURIST over another, but rather to make every page and all departments of equal merit and interest. The immense amount of work that is put into the pages following the household department may not be fully appreciated, however. We would, therefore, direct special attention to the notes on Science in Farming, in which the work of the various agricultural experiment stations at home and abroad is briefly, but accurately, summarized in a way that is within the grasp of every farmer. Each year these stations add to their fund of experience and facts, and their literature becomes increasingly valuable. In Our Library Corner, therefore, is given the full index of the publications issued from the various experiment stations, also from the United States and State Departments of Agriculture. Other books bearing on our foundation industry, whether published by the Orange Judd Co., or elsewhere, are also reviewed. With the aid of these two departments, therefore, the reader should be able to keep pace with the progress of science and literature in agriculture and its various divisions.

A Great Wrong Established.

The most striking feature of agriculture in the arid region is the extent to which private capital is securing control of the supply and distribution of water. Irrigating corporations are so notoriously profitable that their stocks and bonds are becoming a popular security in Eastern money markets, though the extent to which many of them are over-capitalized is not so well known. It is a terrible price to pay for the development of a new section to place it completely in the power of a water monopoly. It is like giving capital control of the very air we breathe.

The rates charged by these corporations for water may not seem exorbitant now, but with the growth of that region the margin of profits on all farming will be brought down to the level of older communities. Then, present rates for water will prove an onerous burden. The mischief of the matter is that some of these corporations have secured perpetual charters, or a right to their water supply "forever," as some of the legal documents read. All sorts of irri-

gation rights are being greedily secured, and questionable tactics are employed without compunction wherever necessary to lay a secure foundation for a monopoly of the water supply.

It requires no brilliant intellect to foretell the contests between the farmers on the one hand and the water monopolists on the other that will mark the future of the arid region. It is time to call a halt to this wholesale and indiscriminate chartering of irrigating companies. If they are permitted in future, it should be only under restrictions that will prevent over-capitalization and extortionate charges, and that will reserve to the people the right to acquire a water company's property at a fair price, exclusive of the franchise or actual supply of water which is now given the company outright.

A sentiment to this effect is tardily manifesting itself in the arid region. Gov. Toole, of Montana, has already attacked the evil with valor and effectiveness. It is an open secret, however, that the water barons favor the immediate cession by government of its arid lands to the respective States of the dry region, in the hope that their corporations can acquire control of the water supply before the States erect legal safeguards against such perpetual monopolies. This has already been done in Wyoming, to a certain degree in Colorado, and much more carefully in California, but much remains to be accomplished before the rights of the great public are fully protected.

Here is a comparatively new field that affords every reason and opportunity for applying the nationalistic idea. Why not cede the arid lands to the State on condition that they own and control, not only the supply of water, but also the canals and ditches by means of which it is brought upon the land. If ever there was a matter that should be wholly controlled by the public, that is, by the State, it is this water question. Now is the time to inaugurate the right method. Every week's delay means an added burden, present and prospective, with no compensating advantages.

D. D. T. Moore.

By the death of D. D. T. Moore, June 3d, agricultural literature lost one of its earliest and foremost

D. D. T. MOORE.

pioneers. He was born in the town of Marcellus, Onondaga Co., N. Y., February 2, 1820, where his father was a Baptist minister. When quite young he learned to set type; later he studied law, but the death of his elder brother, who was the publisher of a weekly paper, issued at Jackson, Mich., induced him to take up his brother's work. A few years later he established the *Michigan Farmer*, the first agricultural paper published in Michigan. This he sold to acquire the *Genesee Farmer*, which he conducted for three years. In 1850 he sold this paper and started *Moore's Rural New Yorker*, in Rochester. This paper soon made a well deserved reputation, and became a substantial success. His removal to New York in 1868 proved disastrous, his various ventures there not proving successful.

Mr. Moore possessed what may be called the journalistic instinct in a remarkable degree, and his knowledge of agricultural matters, with the instinctive ability to choose and present what he had to communicate to his readers, enabled him to become one of the founders of the now great and influential Agricultural Press. His interesting paper helped to make the farmers readers, and the farmer who reads cannot fail to become a better farmer and a successful man. In this way Mr. Moore did a valuable service, for which his memory is to be cherished.

In his private life, our friend was a genial gentleman, although his devotion to his life work left him but little time for the cultivation of many friendships. His neighbors evinced their appreciation of his character by electing him mayor of Rochester, which office he filled with his usual kindness and ability. His many friends and acquaintances will hold him in lasting gratitude for the good work he has done during his lifetime, and will remember him with the kindliest feelings. He left three sons and one daughter.

Mrs. Sutherland.

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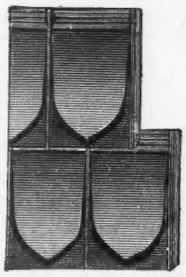

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MATTERS OF BUSINESS.

Heavy Fruit Crop in Georgia.—P. J. Berckmans, Pres. The American Pomological Society informs us that the fruit crop in Georgia is very heavy this year, but so far the fruit is very small. The crop of Japan plums is wonderful.

A Salary—With expenses paid, will come handy to any one who is now out of employment, especially where no previous experience is required to get the position. If you want a position, see advertisement on Page 507, headed, "A Chance to Make Money."

American Southdown Premiums.—The American Southdown Association will offer $1,000 in special premiums at the World's Columbian Exposition for recorded Southdowns, and $250 for wethers at the Fat Stock Show in Chicago, in 1893. For particulars address the Secretary, S. E. Prather, Springfield, Illinois.

Early Peaches.—J. V. B., Austin, Texas. The peach described is no doubt what is known in the Southwest as May Beauty of Louisiana. It originated at New Orleans and is very similar, if not identical, with yellow St. John. It is the earliest yellow peach known and is a valuable market variety. It is well thought of in Delaware and is grown in great perfection in Georgia.

Road Convention.—The Missouri Board of Agriculture have called a Road Convention to meet at Chillicothe, Mo., Aug. 16th to 19th. The meeting will be made a school of instruction in the art of road building. Engineers and expert road builders will be present and with the best machinery will construct sections of road after the most approved systems. Address the Secretary, Levi Chubbuck, Columbia, Mo.

Don't Tobacco Spit Your Life Away is the startling, truthful title of a little book just received, telling all about *Notobac, the wonderful, harmless, economical, guaranteed cure for the tobacco habit in every form.* Tobacco users who want to quit and can't by mentioning AMERICAN AGRICULTURIST can get the book mailed free. Address THE STERLING REMEDY CO., Box 754 Indiana Mineral Springs, Ind.

Knitting Made Easy.—Improvements in knitting machines have been made from time to time until the dream of inventors appears to have been fulfilled in the high-speed knitting machine manufactured by J. E. Gearhart, Clearfield, Pa. It is so simple in mechanism, durable in construction, easy of operation, and thoroughly cheap in price that it will become a necessity in every household, as much so as the sewing machine. The reader is referred to their advertisement in another column.

They Attract National Attention.—"I read with the greatest possible interest the AMERICAN AGRICULTURIST'S most admirable article on the census statistics of cereals in the June number. We live in an age when the majority of professional writers do everything with the least possible trouble. I do not remember to have ever seen so elaborate and painstaking an article in any agricultural journal." So writes Mr. John Hyde, special agent in charge of the agricultural work of the census.

The Milk Consumption of Great Britain is placed at 1,417,000,000 gallons, there being 3,544,575 productive, and 411,645 non-productive, cows, with an average annual yield of 400 gallons per cow. There were used for butter 67,000,000 gallons, making 105,000 tons; for cheese 224,000,000 gallons, making 100,000 tons, for condensed milk 6,000,000 gallons, and for consumption as milk 570,000,000 gallons. In Ireland there are 291 cows per 1,000 of population, while in Great Britain there are but 78 cows per 1,000, as against 82 some 20 years ago, the cows not increasing as quickly as the population.

Prosperity of Kansas—The State of Kansas is again attracting the attention of farmers throughout the country because of its series of successful crops in the past three years. In view of the large movement of agriculturists into that State, the Land Department of the Santa Fe Road is having prepared a new folder descriptive of the resources of the State, with revised maps, reliable statistics and other information. Anyone interested in this can obtain a copy free, by making written application to John J. Byrne, Assistant Passenger Traffic Manager, Atchison, Topeka & Santa Fe R. R., Chicago, Ill.

The Uses of Expanded Metal.—Expanded metal is made from a piece of steel cut with the grain, and pushed or expanded into diamond-shaped meshes so that the original surface is greatly increased. Each mesh is independent of the others and numerous strands may be cut without materially weakening the sheet. It is impossible to unravel it as it is solid at all points of intersection. The uses of expanded metal are so varied and suggestive that there is hardly a limit to its application. Besides furnishing a base for inside plastering and outside work for outbuildings, it is successfully and profitably used for fences, gates, window guards, poultry houses and coops, grape arbors, lattice work, railing, tree boxes, lawn borders, and innumerable other purposes. The neat illustrated catalogue of the manufactur-

(*Continued to Page 505.*)

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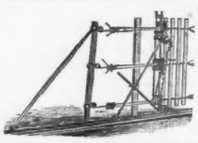

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MATTERS OF BUSINESS.

(*Continued From Page* 504.)

ers, the Central Expanded Metal Co., Pittsburgh, Pa., make interesting reading for everyone interested in buildings and progress in this direction. It will be mailed free to all applicants mentioning the AMERICAN AGRICULTURIST.

A National Exhibit of Dairy Products.—A novel feature has been added to the first United States Food Exposition, to be held at Madison Square Garden, New York, in October next. A national exhibit of dairy products will be in charge of Professor James Cheesman, who represented the dairy interests of the United States at the late Paris Exposition, and who has an international reputation as a dairy expert and as an authority in all matters pertaining to the dairy interest. This part of the Exposition promises to be very popular. Address the Secretary, Daniel Browne, New York.

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How to Become a Lawyer.—Thousands of young men and women who are unable to take a regular course in a law school, pursue the study of law with insufficient guidance and, yet, with the proper system of instruction these might attain a pretty thorough knowledge of the science of law. To supply this want the Sprague Correspondence School of Law was organized at Detroit, Mich. While it does not claim to enter into competition with the University Law School, it has its own particular field in directing the course of study for students who enter the institution. The plan is in the line of the Chautauqua idea of teaching, the success of which is unquestioned the world over. The school year begins the first day of each month so that scholars may enter at any time. The terms are exceedingly moderate, and to those who wish to pursue the study of law either as a professional or for business reasons, this institution furnishes unequalled facilities. The catalogue of the school, just issued, gives full explanation of the system and plan of the course. It will be sent free to readers of the AMERICAN AGRICULTURIST who apply for it.

Bonanza Farming.—The immensity of the great bonanza farms and their wholesale methods of farming seem almost incredible to Eastern farmers who have never witnessed a grand harvesting scene of the great Northwest. These immense wheat farms compare with the small Eastern farms as a great wholesale jobbing house with a small, retail, country store. The bonanza farmer is a manufacturer in the best sense. Everything is concentrated upon the one product, wheat, and this is produced by choosing the best materials, the best methods and machinery in order to secure the best possible returns. During the heat of the harvest his whole fortune is often in the balance, and success depends largely upon the excellence of the harvesters and binders employed. Foremost among these stands the Deering Self-Binding Harvesters. A line of 20 or 30 of these, clicking steadily along through 1,000 acres of ripe yellow wheat, is a sight worth going a great ways to see and one that will not soon be forgotten. While these famous machines are principally used on the immense Western farms, they could be profitably used on many smaller farms. A careful study of the new catalogue of Wm. Deering & Co., Chicago, Ills., together with their book "Grass, Grain and Gain" will be time profitably spent by any farmer. It will be mailed free to all applicants mentioning the AMERICAN AGRICULTURIST.

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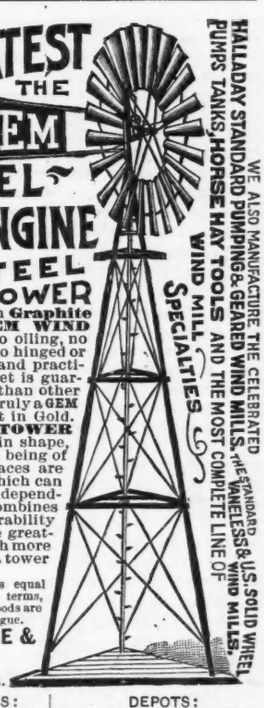

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OUR AGRICULTURAL REVIEW.

Russia's Land System a Failure.—The system of communal ownership of land is responsible for the famine in Russia, in the opinion of William C. Edgar, commissioner from America to the Russian sufferers. The *mir*, or community, in which the land is divided into lots and held in common, has simply exhausted itself. The thirty years which have elapsed since the emancipation of the serfs have proved that the practical result of holding land in common, at least in Russia, is a complete and utter failure. The peasant sees simply as far as the season's work, because he may, after one, two, or three seasons, be dispossessed of his land, therefore he does not change his primitive methods of cultivation or till his area thoroughly.

Upon their emancipation, the improvident, untrained serfs immediately fell victims to the rapacity of money-lenders, petty officials and small traders. The original apportionment of land per head was very small, and, as families grew up, the land belonging to the commune had to be subdivided. Even with modern methods of tillage the peasant would have come very near to hunger.

Personal liberty aside, he is apparently much worse off than he was before emancipation. In those days a landed proprietor could easily borrow money from well-to-do peasants on his estate; now an unceasing effort must be put forth to save them from starvation. When Alexander II. emancipated the serfs, in 1861, the landed proprietors found their occupation gone and, in most instances, removed to the capital or spent their time in travel, and the most of their land passed into the hands of the peasants, the balance remaining idle. The estates and the dealing with tenants were left to superintendents, and the class of people upon whom the peasants relied for guidance and help were relieved of responsibility. But where the hungry peasants asked aid of their old masters, it has been given, even when it financially ruined the giver. To-day the landed proprietor is doing what he can for the sufferers. Through him the government was informed of the true state of affairs. He is not responsible for the present situation, nor, in the majority of cases, does he receive any income from those he is helping. The return of the landed proprietor to his estate and, to some extent, to his former responsibilities, the self-sacrificing work he and his family are now doing, is the only bright spot in an overcast sky. In bringing the two classes back to their old relations the famine may be a blessing in disguise. Better by far is the rule of the ancient proprietors, moderated and curtailed to meet modern requirements, than the government of petty officials and the impositions of the village usurer. Russia must give her peasants another start, and, ceasing to be an exporter of grain, allow them to accumulate a village reserve.

The Agricultural Part of the Census work is now being pushed more rapidly. A large number of Hollerith electric tabulating machines are now at work on the statistics of acreage, farm tenure, farm values and farm implements. This machine is capable of wonderful combinations of work, and comes nearer to imitating the operations of the human mind than any other mechanism ever devised. For instance, the final report will show the number of white and colored farmers cultivating farms of any given size, as owners, or as renters for money or for a share of the products, and graded according to value of farm, value of products, value of farm machinery, value of live stock, and amount paid for labor. All this information will be combined in every way likely to be of public interest or of economic value.

No Mountain Forests, No Water Supply.—If our mountain forests were rightly managed they would forever increase in fertility, and the quality of their timber would be, thereby, gradually improved. Proper management means the cutting of every tree when it reaches its best estate. The soil of a mountain forest is held in place by the trees. In the Adirondack region of Northern New York many thousands of acres of land which would have produced timber forever are now absolutely worthless, the soil having been burned and wasped away down to the underlying rocks and sand. This fatal process has long been going on in the White Mountain region, and on some limited areas here the ruin has been completely accomplished. The utter desolation of these tracts shows what is the destiny of a large proportion of the White Mountain region if nothing adequate is done to interfere with existing conditions and agencies. This ruin of our natural resources is entirely unnecessary. All timber should be cut when it is ripe; that is what it is for; and a perpetual succession of crops of this product can be grown and harvested without impairing the fertility of the soil. The methods of cutting usually

(*Continued on Page* 507.)

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OUR AGRICULTURAL REVIEW.

(*Continued from Page* 506.)

employed in this country are the mere butchery of the forest.

There is no likelihood that timber will be cut and utilized by private or individual owners without injury to the forest, and the State of New Hampshire should resume possession of its mountain forest lands, by the exercise of the right of eminent domain, paying a just price to the present holders. Extensive tracts were disposed of in 1867 for almost nothing per acre. State ownership of our mountain forest regions is rapidly becoming a necessity on account of the relation of mountain forests to the water supply of the country. The soil of these forests constitutes immense natural storage reservoirs, retaining the water which falls and distributing it slowly. The longer the soil of such a region increases in depth, the greater becomes its capacity for retention of water, and the streams, descending therefrom, will have a fuller and more equable flow. The area of bog, swamp lands, ponds and "springy ground" extends itself farther and farther downward and outward into the country surrounding the mountains. When the rain falls on naked rocks the streams become floods, great rivers are choked up with sand and debris. The Hudson river has suffered seriously from the removal of forests. There is a great opportunity for State forestry in New York, where the State owns more than 700,000 acres of forest land, but little is done; on the contrary, influential citizens appropriate State property for private use. These intruders should be ejected, and the poorest person, able to reach the State forest reservation, should have equal right and opportunity there with the richest.

Pennsylvania has suffered great injury for want of control and administration of her mountain forests. If these continue to be burned, the fertile lands near the foothills will be buried, and the channels of the streams will be dusty and windswept in the summer, as in the West. The people of the State should take possession of the mountain forest lands and establish a State system of forestry, and this course should be speedily adopted by all the States which include any portion of the Appalachian mountain system. All such lands owned by the nation should at once be withdrawn from sale and put under the guardianship of the national army, until a comprehensive and efficient system of forestry has been established over them. If the remaining portions of the national domain shall soon pass into the possession of the States, within whose boundaries they are situated, the mountain forest lands everywhere should be held and administrated by the States, as such. This is especially manifest in relation to the regions which require irrigation. No possible system of dams, or of hydraulic engineering of any kind can secure, or control, an adequate supply of water for extensive agriculture if forest conditions are destroyed on the mountains above the arid region. This timely warning is from the pen of Mr. J. B. Harrison, Secretary of the New Hampshire Forestry Commission, through the medium of the *Cosmopolitan* for July.

The Consumer.—The consumer, as described in the July *Forum* by Mr. Isaac Rice, gets all the benefits of stealing, by means of eliminating wages, interest, rent and profits. With the disappearance of slavery, it became necessary to keep wages down as low as possible. Laws regulating wages and fixing the hours of labor were supplemented by indirect laws; for instance, those against vagrancy. Indeed, what would have been the use of making laws regulating wages and fixing the hours of labor if the laborer had the option of refusing to work?

Interest has not been abolished, like slavery, because money cannot be whipped into circulation, as a slave can be whipped into working. It can be regulated by usury laws, and you can repudiate your debt or enact laws for the free coinage of silver. Rent continues to exist, for the landlord, who did the legislating, forgot himself as consumer and so made the rent laws as to recoup for whatever losses he sustained as consumer. Since, however, that Ricardo discovered that rent is not an element of price, the landlord has been able to keep on increasing rents without serious objection, except in Ireland, while as voter he continues to aid in reducing the factors of price which embarrass the consumer. Henry George's argument for eliminating the landlord is meeting with constantly increasing favor, and in that future civilization in which questions of mere elimination of elements of price are of importance, it will engage serious attention.

The chief object of resentment to the consumer is profits. Philanthropic people are prompted by conscience to favor constantly increasing wages, but could not think of having them increased at their own expense; the profit-taker pays the wages, and upon him can be vented their sympathetic feelings for down-trodden humanity. After enacting laws against trusts and all devices for increasing profits, competition can be left to do the rest, for the profit-taker will eliminate for you the items of rent, wages and interest.

What prosperity awaits us when railroad rates, in the progressive lowering effected by the united efforts of railroad commissions and unrestrained competition, wages, interest, rent and profits, which make so large an item of cost to the consumer, shall have been entirely eliminated! Superior to railroad commissions, the laws for unrestrained competition, and, indeed, all previous statutes, is the federal anti-trust law.

Government and the Farmer.—In reviewing what the government has done and is doing for the farmer, in the July *Century*, A. W. Harris deals first with the oleomargarine law and its results. He says that while the oleo industry has actually increased since the Act of Congress of 1886, imposing special taxes on dealers and product, it has helped to raise the price of butter, especially that of good butter. By confining the oleomargarine competition to the poorer grades of butter, it has doubtless caused improvement in these grades. By preventing oleo from masquerading for a more expensive article, it has kept the price down, greatly to the advantage of consumers. By compelling oleomargarine to be sold under its own name, it has relieved that product from the reproach of being a fraudulent article and has given it an honorable position in commerce as a legitimate means of utilizing waste products and as a cheap, wholesome substitute for an expensive necessity. The writer adduces statistics showing the growth of the industry. The number of pounds produced in the year ending June 30, 1888, was 34,325,527; for the year ending June 30, 1891, it has 44,392,409. The internal revenue receipts increased from $864,137 in the year ending June 30, 1887, to $1,077,924 in the year ending June 30, 1891.

The establishment of a new sugar industry, the manufacture of sugar from sorghum, may be expected as a result of a feature of the agricultural appropriation bill of 1891, exempting from internal revenue tax the alcohol used in this process. The recognition by the government of its duties to the farmer is shown in the agricultural schedule of the McKinley Act and its reciprocity section.

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Book Reviews.

AGRICULTURE OF SOUTH AMERICA, with maps and latest statistics of trade. Prepared under the direction of the Statistician, by Almont Barnes. Washington: Department of Agriculture; pp. 190.

The United States pays eight dollars for South American farm produce, to every dollar of our crops sold to that continent. But South America buys largely from Europe. South America's total imports were valued at 376 million dollars in one year, and her exports at 371 millions. Of these imports the United States furnishes only 33 millions of dollars, and receives of the exports 118 millions. The wonderful expansion of our own industries has increased our demands for agricultural and other products not suited to our climate. Justice to our farming interests requires that our agricultural products should be sent in return. But nearly three-fourths of our imports and about half of our exports are carried under European flags, which thus control the distribution of North and South American products. The vessels of established and usually subsidized European lines carry from European ports the products of the Old World to non-competing tropical America, their best market. These foreign ships bring from tropical America to the United States the 70 per cent. of our imports. This transfer is also non-competing and to a best market. These imports are then replaced in the European vessels by such articles of our exports as Europe requires, and thus our surplus products are carried to competing markets, which greatly lower the prices. Europe will not allow her vessels to reverse the routes and carry our exports to South American non-competing ports, but there is one American line to Brazil, and one to Venezuela, and the Pacific mail line to Central America. Under our reciprocity law many South American export and import duties have been abolished in return for the admission of their non-competing farm products practically duty free. Statistician J. R. Dodge considers that the desirability, if not necessity, of enlarging our markets for the surplus of farm production is an urgent reason for cultivating this neglected commercial field, and for the publication of all available information covering the products and the market needs of South America, toward which this report is a good beginning.

ELEMENTS OF AGRICULTURE — A Text-Book Prepared under the authority of the Royal Agricultural Society of England. By W. Fream. Illustrated, 12mo.; cloth, pp. viii. 450. London: John Murray, 1892.

This excellent volume is very interesting to the general reader, though it was prepared by the Royal Agricultural Society of England as a text-book for schools and colleges. Lord Moreton and Sir John Lawes revised the proof sheets. Thus aided, Dr. Fream has produced an authentic treatise on agriculture. Part First treats of the soil and its preparation and improvement. The Second Part describes the plant, farm crops, weeds and insects, and plant diseases. Part Third discusses the structure and functions of farm animals and the feeding and management of the various breeds of horses, cattle, sheep, and pigs. As agriculture applies many sciences, it is very difficult to avoid writing a long treatise on each. This volume so very happily applies the latest scientific knowledge in every chapter that it is a farmers' book from beginning to end. Sold by the Orange Judd Co. Price, postpaid, $1.25.

INDIA. As seen by Robert Wallace, Professor of Agriculture and Rural Economy in the University of Edinburgh. Edinburgh: Oliver & Boyd. 363 pp. Il., 8 vo., cloth.

The Zebu, or humped cattle of India do much of the work usually done by horses in America, or by camels in Africa and central Asia. The Indian cattle are valued for their strength and activity, and not for their flesh-producing capabilities. Without them, agriculture would be completely paralyzed, as no other common source of motor power is available to accomplish the work done by these cattle. Horses are not to be had and even if it were possible to secure them, their shoulders could not withstand the jerk of the rude native plows, and their hoofs would pack the wet soil. Only the low caste natives eat beef, the slaughter of animals for any purpose being forbidden by the religion. Milk and its products are largely used by all classes. The peculiar breeds of draught and trotting cattle, and the system of agriculture of which they form a conspicuous feature are well described in this magnificent volume. Sold by the Orange Judd Co. Price, postpaid, $10.

THE OXFORD DOWN FLOCK BOOK. Vols. I. II. III. IV. Rams, 1—1040. Ewes, 1—79. London: Oxford Down Sheep Breeders' Association. 116, 84, 96 pp., 8 vo., cloth.

The Oxford Down breeders continue to aim at the production of sheep which possess plenty of lean meat, and which are distinguished by quality, while at the same time they seek to maintain the size and fattening propensities of this breed, which produces an abundance of excellent mutton, wool and lambs. These volumes are of especial interest to those breeders who import sheep, duty free. Sold by the Orange Judd Co. Price, postpaid, $5 per volume.

ELEMENTARY BOTANICAL EXERCISES. For Public Schools and Private Study. By Charles E. Bessey, Ph. D. Lincoln: J. H. Miller, 1892. 52 pp., 16 mo., paper.

Many persons are so unfortunate as not to have learned anything of the plants and plant life which surround them. Dr. Bessey has prepared this little volume for such persons—as well as for class work. The reader is told what plants to gather each month of the year, how to experiment with them, and what to learn from them. The common fungi and water plants are to be studied as well as the common trees and plants. Sold by the Orange Judd Co. Price, postpaid, 35 cents.

PRACTICAL FRUIT CULTURE. A Treatise on Planting, Growing and Storage of Hardy Fruits for Market and Private Growers. By J. Cheal, F. R. H. S. London: George Bell & Sons, 1892. 194 pp., Il., 16 mo., boards.

This volume is an attempt to adapt American methods of fruit growing to the English climate. Directions are given for the selection of the soil and location for the orchard; the preparation of the ground; planting and pruning; renovating old orchards; storing and marketing; the kitchen garden; training on walls and fences; and the treatment of insect pests and diseases. Sold by the Orange Judd Co. Price, postpaid, 75 cents.

INJURIOUS AND OTHER INSECTS OF THE STATE OF NEW YORK.—Seventh Report of the State Entomologist. By J. A. Lintner, Ph. D., Albany, 1891.

This volume contains a very readable account of many of the important insects of New York and other Atlantic States. The occurrence, life history, food, plant, or animal, and remedies, are given for each insect, with a list of publications in which each is described. Special attention is paid to the Bean Weevil, the Plum Curculio, the Gypsy Moth, and the Clover Mite.

AMERICAN SHROPSHIRE SHEEP RECORD. Vol. VII. Nos. 21,173—32,248. Edited by Mortimer Levering, Sec'y, LaFayette, Indiana. Published by the American Shropshire Registry Association, 1892. 1166 pp., 8 vo., half Russia, $2.50.

This superb volume contains a list of members, a record of pedigrees, a directory of breeders and importers, a list of owners and an alphabetical list of named Shropshire sheep.

Recent Publications.

SUNDRY REPORTS.

COLORADO BOARD OF AGRICULTURE. Report 1891. Frank J. Annis, Sec'y, Ft. Collins. 88 pp., 8 vo., paper.

EVAPORATION OF FRUITS AND VEGETABLES. A Practical Guide. In Russian. St. Petersburg: V. W. Tichernieoff, 1891. 292 pp., Ill., 8 vo., paper.

FORECAST OF FROST. By R. C. Kedzie, Agricultural College, Michigan. 8 pp., 8 vo., paper.

NEBRASKA ENTOMOLOGY. Report 1891. By L. Bruner, State Entomologist, Lincoln. 240—309 pp., 8 vo., paper.

GRASS EXPERIMENT STATIONS, in the West and South. By J. A. Sewall, S. M. Tracy and others. Washington Gov't. 1892. 12 pp., 8 vo., paper.

PHILADELPHIA BUSINESS DIRECTORY, 1892. Compiled by S. Fred Boyd. Philadelphia: C. E. Howe. 1384+52 pp., 8 vo., cloth.

MARYLAND CHEMICAL INVESTIGATIONS. Report 1891. By H. J. Patterson, College Park. 297—346 pp., 8 vo., paper.

ALMOND TREE DISEASE. By N. F. Pierce and B. T. Galloway. Washington: Gov't. 1891. 66—78 pp., 8 vo., paper.

NEW JERSEY BOARD OF AGRICULTURE. Report 1891-92. Franklin Dye, Sec'y, Trenton. 619 pp., 8 vo., cloth.

WOLVERTON, or The Modern Arena. By D. A. Reynolds. Chicago and New York: Rand, McNally & Co. 391 pp., 12 mo., cloth.

KANSAS BOARD OF AGRICULTURE. Report to Jan. to March 1892. M. Mohler, Sec'y, Topeka. 159 pp., 8 vo., paper.

MY WATER CURE. By Sebastian Knapp of Wörishofen, Bavaria. New York: Fr. Pustet & Co. 396 pp., Il., 12 mo., cloth.

MASSACHUSETTS HORICULTURAL SOCIETY. Report 1891. Part I. Robert Manning, Sec'y, Boston. 242 pp., Il., 8 vo., paper.

AGRICULTURAL EXPERIMENT STATION BULLETINS.

CALIFORNIA—At Berkeley. Analyses of prunes, apricots and peaches (B. 97).

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FLORIDA—At Lake City. Southern crops (B. 16).

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UNITED STATES GOVERNMENT PUBLICATIONS.

DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.—Acreage of wheat and cotton, Condition of cereal crops and Freight rates (S. R. 96). Crop synopsis (9). Foods and food adulterants—tea, coffee and cocoa preparations (C. B. 13). Sugar beets in 1891 (C. B. 33). Sorghumin 1891 (C. B. 34). Practical work in entomology (E. B. 26). Insect life (9, iv. 10, iv). Lectures on the investigations at Rothamsted (E. S. B. 8). Fermentations of milk (E. S. B. 9). Experiment station record (10, iii). Contributions from the national herbarium (2, ii). Artesian and underflow investigation (Parts 1, 2, 3, 4). Climate of Death Valley, California (W. B. 1). Weather review for March. Weekly weather-crop bulletin-maps. Lard adulteration—Mushrooms (Report Microscopist, 1891). Forestry report, 1891.

DEPARTMENT OF STATE, WASHINGTON, D. C.—The vine in Uruguay—English hops—Consular reports (140). Trade of Great Britain and Ireland (141). Stave trade in foreign countries.

FROM THE TRADE.

BOOMER & BOSCHERT PRESS CO., Syracuse, N. Y.: Illustrated and descriptive catalogue of Cider and Wine machinery, giving a clear idea of the great excellence and varieties of hand and power mills and presses manufactured by this Company.

W. ATLEE BURPEE & CO., Philadelphia, Pa.: Descriptive and illustrated catalogue of "Our Collies as bred at Fordhook Kennels." In addition to the descriptions and illustrations of these famous collies is published a chapter on the diseases of dogs and the remedies for their cure.

HENRY A. DREER, Philadelphia, Pa.: "Midsummer List." Descriptive and illustrated catalogue of pot-grown and layer strawberries, vegetable and flower seeds for summer and fall sowing, ornamental and flowering plants for summer planting, fertilizer implements, etc.

T. J. DWYER, Cornwall, N. Y.: Catalogue of pot-grown and layer strawberry plants; also celery, cabbage, and cauliflower plants. The leading varieties are handsomely illustrated and carefully described. The new E. P. Roe strawberry a specialty.

JEFF WELBORN, New Boston, Texas: Descriptive circular of the Cunningham Cotton Harvester.

G. H. GRIMM MFG. CO., Hudson, Ohio: Catalogue of the Champion Evaporator, Regulator and Siphon, for Maple, Sorghum and Fruit jellies. A large number of testimonials from all parts of the country testify to the excellence of this machinery.

UNITED STATES NURSERIES, Short Hills, N. J.: A special offer of Imported Orchids, comprising many of the best varieties. Orchid Seed & Plant Co., San Diego, Cal. Golden Hints for California, also Cacti Illustrated. An interesting descriptive list of California plants.

HOUSEHOLD ARTICLES.

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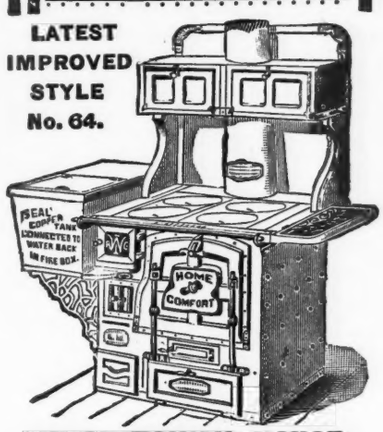

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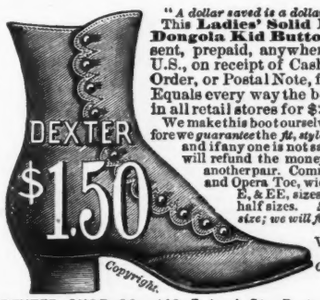

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State, County and Other Fairs in 1892.

PREPARED EXPRESSLY FOR THE AMERICAN ACRICULTURIST.

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To Our Readers.

If your County or District Fair does not appear in the list below, kindly request the Secretary of the Society to forward to us the name of the place where, and the date when, it is to be held. We desire a complete list of fairs in the United States and Canada to appear in the September number of the AMERICAN AGRICULTURIST.

STATE AND PROVINCIAL FAIRS.

Alabama	Birmingham	Nov. 9-19
American Institute	New York	Oct. 10 Dec. 10
California	Sacramento	Sept. 5-15
Canada	Toronto	Sept. 5-17
Canada "Central"	Ottawa	Sept. 22-Oct. 1
Canada	Montreal	Sept. 15 23
Connecticut	Meriden	Sept. 20 23
Delaware	Dover	Sept. 19 24
Georgia	Macon	Oct. 25-Nov. 4
Illinois	Peoria	Sept. 26 30
Illinois "Chicago Fat Stock"	Chicago	Nov. 16 26
Indiana	Indianapolis	Sept. 19-24
Iowa	Des Moines	Aug. 26-Sept. 2
Kansas	Topeka	Sept. 12-17
Kentucky	Lexington	Aug. 30-Sept. 3
Louisiana	Shreveport	Oct. 31-Nov. 5
Manitoba	Winnipeg	July 25-30
Maine	Lewiston	Sept. 6-9
Michigan	Lansing	Sept. 12-16
Michigan "International"	Detroit	Aug. 23-Sept. 3
Minnesota	Hamline	Sept. 5-10
Missouri	St. Louis	Oct. 3-8
Missouri	Sedalia	Aug. 15-20
Montana	Helena	Aug. 13-19
Nebraska	Lincoln	Sept. 5-9
New England	Worcester, Mass	Aug. 30-Sept. 2
New Hampshire	Tilton	Sept. 13-15
New Jersey "Waverly Park"	Newark	Sept. 20-24
New York	Syracuse	Sept. 5-15
New York, "Buffalo Exposition"	Buffalo	Aug. 17-27
New York "Interstate"	Elmira	Aug. 29-Sept. 7
North Carolina	Raleigh	Oct. 18-21
Ohio	Columbus	Sept. 12-16
Ohio "Interstate"	Toledo	Sept. 5-10
Oregon	Salem	Sept. 12-17
*Rhode Island	"Narragansett Park" Cranston	Sept. 19-23
South Carolina	Columbia	Nov. 7-11
South Dakota	Sioux Falls	Sept. 12-16
Tennessee		
Texas	Dallas	Oct. 17-30
Vermont	White River Junction	Sept. 13-16
Virginia	Richmond	Oct. 6-26
Washington	Walla Walla	Sept. 6-Oct. 1
West Virginia	Wheeling	Sept. 5-9
Wisconsin	Milwaukee	Sept. 12-16
*Prince Edward Island	Charlottetown	Sept. 23-30

ALABAMA.

Butler	Greenville	Oct. 25-29

ARKANSAS.

Bradley	Warren	Oct. 19-21
Ouachita	Camden	Oct. 25-29
St. Francis	Forrest City,	Oct. 4-6

ARKANSAS DISTRICT.

Hempstead	Hope	Oct. 18-22
Phillips	Helena	Oct. 18-21

CALIFORNIA.

Amador	Ione	Sept. 27-30
Fresno	Fresno	Sept. 26-Oct. 1
Inyo	Independence	Sept. 27-30
Lassen	Susanville	Oct. 3-7
Napa	Napa	Aug. 22-27
Nevada	Nevada City	Aug. 23-28
Plumas	Sierraville	Oct. 3
San Joaquin	Stockton	Sept. 19-Oct. 1
San Luis Obispo	San Luis Obispo	Sept. 27-Oct. 1
Santa Barbara	Santa Barbara	Aug. 23-27
Santa Clara	San Jose	Sept. 26-Oct. 5
Santa Cruz	Santa Cruz	Oct. 15
Stanislaus	Modesto	Sept. 28-Oct. 1
Tehama	Red Bluff	Aug. 16-20

COLORADO.

Gunnison	Gunnison	Sept. 27-30

CONNECTICUT.

Hartford	Collinsville	Sept. 28-29
Litchfield	New Milford	Sept. 7-9
New London	Norwich	Sept. 27-29
New Haven	Guilford	Sept. 28
Tolland	Stafford Springs	Oct. 11-13
Windham	Willimantic	Oct. 4-6
Windham	Danielsonville	Sept. 20-22

CONNECTICUT DISTRICT.

Fairfield	Huntington	Sept. 20-22
Litchfield	Watertown	Sept. 13-15

DELAWARE.

Kent	Dover	Sept. 19-24

ILLINOIS.

Adams	Quincy	Aug. 29-Sept. 2
Alexander	Cairo	Sept. 6-9
Boone	Belvidere	Aug. 30-Sept. 2
Brown	Mt. Sterling	Aug. 15-19
Bureau	Princeton	Sept. 6-9
Carroll	Mt. Carroll	Sept. 6-9
Champaign	Champaign	Aug. 30-Sept. 2
Champaign	Homer	Aug. 9-12
Christian	Assumption	Sept. 6-10
Coles	Charleston	Sept. 6-10
De Kalb	Sandwich	Sept. 5-9
De Witt	Clinton	Aug. 8-12
De Witt	Farmer City	Aug. 30-Sept. 2
Du Page	Wheaton	Sept. 6-9
Edgar	Paris	Aug. 29-Sept. 2
Edwards	Albion	Sept. 27-30
Effingham	Watson	Sept. 20-23
Fayette	Vandalia	Sept. 6-9
Franklin	Benton	Sept. 20-23
Fulton	Canton	Sept. 20-23
Fulton	Avon	Sept. 13-16
Gallatin	Shawneetown	Aug. 30-Sept. 3
Greene	Carrollton	Aug. 23-26
Hancock	La Harpe	Aug. 29-Sept. 2
Hancock	Carthage	Sept. 5-9
Hardin	Elizabethtown	Aug. 9-13
Henry	Kewanee	Sept. 12-16
Iroquois	Milford	Aug. 23-26
Jasper	Newton	Sept. 13-16
Jersey	Jerseyville	Oct. 11-14
Jo Daviess	Galena	Oct. 4-7
Johnson	Vienna	Sept. 13-16
Kankakee	Kankakee	Sept. 13-16
Kendall	Yorkville	Aug. 30-Sept. 2
Knox	Knoxville	Sept. 5-9
Lake	Libertyville	Sept. 20-23
Livingston	Fairbury	Sept. 5-9
Logan	Atlanta	Sept. 6-9
Macon	Macon	Aug. 16-19
Macoupin	Carlinville	Aug. 30-31
McDonough	Macomb	Aug. 22-26
McHenry	Woodstock	Aug. 30-Sept. 2
McLean	Bloomington	Sept. 13-16
McLean	Saybrook	Aug. 23-26
Menard	Petersburgh	Aug. 30-Sept. 2
Mercer	Aledo	Sept. 20-23
Morgan	Jacksonville	Aug. 23-26
Moultrie	Sullivan	Aug. 30-Sept. 3
Ogle	Rochelle	Sept. 13-16
Peoria	Dunlap	Sept. 14-16
Perry	Pinckneyville	Oct. 4-7
Piatt	Monticello	Aug. 15-19
Pike	Griggsville	Aug. 8-12
Richland	Olney	Oct. 17-21
Saline	Harrisburg	July 26-29
Sangamon	Springfield	Sept. 5-9
Schuyler	Rushville	Aug. 8-12
Shelby	Shelbyville	Aug. 23-27
Stark	Toulon	Sept. 20-23
Stark	Wyoming	Aug. 30-Sept. 2
Stephenson	Freeport	Sept. 13-16
Tazewell	Delavan	Aug. 23-26
Tazewell	Mackinaw	Aug. 30-Sept. 2
Union	Jonesboro	Sept. 13-23
Union	Anna	Aug. 30-Sept. 2
Vermillion	Catlin	Aug. 16-19
Vermillion	Danville	Sept. 5-8
Vermillion	Hoopeston	Aug. 29-Sept. 2
Wabash	Mt. Carmel	Sept. 13-16
Warren	Monmouth	Sept. 12-16
White	Carmi	Sept. 6-10
Winnebago	Rockford	Sept. 5-9
Woodford	El Paso	Sept. 12-16

ILLINOIS DISTRICT.

Christian	Assumption	Sept. 5-9
Christian	Pana	Aug. 30-Sept. 3
La Salle	Mendota	Aug. 30-Sept. 2
McDonough	Bushnell	Aug. 16-19
St. Clair	Belleville	Sept. 6-9
Saline	Eldorado	Aug. 1-5
Whiteside	Morrison	Sep. 6-9

INDIANA.

Benton	Boswell	Sept. 5-9
Boone	Lebanon	Aug. 15-19
Carroll	Camden	Sept. 5-9
Clark	Charlestown	Sept. 5-9
Clinton	Frankfort	Aug. 22-26
Daviess	Washington	Sept. 19-24
Dearborn	Lawrenceburg	Aug. 23-27
Decatur	Greensburgh	Aug. 29-Sept. 2
Delaware	Muncie	Aug. 15-19
Dubois	Huntingburgh	Sept. 12-17
Floyd	New Albany	Sept. 12-16
Fountain	Covington	Sept. 12-16
Fulton	Rochester	Aug. 31-Sept. 3
Gibson	Princeton	Sept. 5-10
Grant	Marion	Sept. 27-30
Grant	Fairmount	Sept. 12-17
Greene	Bloomfield	Sept. 12-17
Greene	Linton	Aug. 29-Sept. 2
Hancock	Greenfield	Aug. 22-26
Harrison	Corydon	Aug. 29-Sept. 2
Henry	New Castle	Aug. 9-13
Henry	Middletown	Aug. 9-12
Howard	Poplar Grove	Sept. 26-30
Huntington	Huntington	Sept. 13-17
Huntington	Warren	Sept. 6-10
Indiana	Evansville	Sept. 26-Oct. 1
Jay	Portland	Sept. 26-30
Jefferson	Madison	Aug. 16-19
Jennings	North Vernon	Aug. 9-12
Johnson	Franklin	Sept. 13-17
Knox	Vincennes	Oct. 10-15
Koscinsko	Warsaw	Oct. 5 8
Lake	Crown Point	Sept. 27-30
La Porte	La Porte	Sept. 27-30
Lawrence	Bedford	Oct. 3-8
Marshall	Bourbon	Oct. 4-7
Marshall	Bremen	Sept. 27-30
Marshall	Marmont	Sept. 13-16
Marshall	Plymouth	Sept. 20-23
Miami	Macy	Sept. 7-10
Miami	Peru	Sept. 13-16
Monroe	Bloomington	Sept. 26-Oct. 1
Scott	Scottsburgh	Aug. 30-Sept. 2
Shelby	Shelbyville	Sept. 6-10
Spencer	Rockport	Sept. 19-24
Steuben	Angola	Sept. 20-23
Sullivan	Sullivan	Sept 5-10
Switzerland	East Enterprise	Aug. 30-Sept. 2
Tippecanoe	Lafayette	Aug. 29-Sept. 2
Tipton	Tipton	Aug. 8-13
Vanderburgh	Evansville	Sept. 26-Oct. 1
Vermillion	Cayuga	Sept. 19-23
Vermillion	Newport	Oct. 3-7
Vigo	Terre Haute	Aug. 22 26
Wabash	North Manchester	Sept. 27-30
Wabash	Wabash City	Sept. 20-23
Warren	West Lebanon	Sept. 27-30
Washington	Salem	Aug. 23 26
Wayne	Dalton	Aug. 23-26
Wayne	Hagerstown	Aug. 16-19
Whitley	Columbia City	Oct. 4 7

INDIANA DISTRICT.

DeKalb	Auburn	Sept. 12-16
DeKalb	Waterloo	Oct. 3-7
Elkhart	Goshen	Oct. 3 7
Gibson	Oakland City	Aug. 22-27
Hendricks	North Salem	Aug 1-5
Henry	Knightstown	Aug. 30. Sept. 3
Montgomery	Crawfordsville	Sept. 5 9
Montgomery	New Ross	Aug. 8 12
Newton	Kentland	Sept. 6-9
Newton	Morocco	Sept. 20-23
Noble	Kendallville	Sept. 26-30
Noble	Ligonier	Sept. 19-23
Owen	Spencer	Aug. 15-20
Perry	Rome	Oct. 3-8
Pike	Petersburg	Aug. 29-Sept. 3
Porter	Valparaiso	Sept. 20-23
Posey	New Harmony	Sept. 12-16
Pulaski	Francesville	Sept. 13-16
Pulaski	Winamac	Sept. 27-30
Putnam	Bainbridge	Aug. 29-Sept. 3
Randolph	Winchester	Aug. 30-Sept. 3
Rush	Rushville	Sept. 13-17
St. Joseph	Mishawaka	Sept. 12-16
St. Joseph	South Bend	Sept. 12-16
Michigan	Detroit	Aug. 23-Sept. 2
Michigan	Dowagiac	Oct. 4-7
Michigan	Hillsdale	Oct. 3-7
Parke	Bridgeton	Aug. 8-13
Ripley	Osgood	Aug. 2-5
Washington	Pekin	Sept. 20-23

IOWA.

Adams	Corning	Sept. 19-23
Allamakee	Waukon	Sept. 12-16
Appanoose	Centerville	Sept. 20-23
Audubon	Audubon	Sept. 12-15
Benton	Vinton	Sept. 13-16
Boone	Ogden	Sept. 6-9
Buchanan	Independence	Sept. 13-16
Buena Vista	Alta	Sept. 7-9
Calhoun	Rockwell City	Sept. 14-17
Carroll	Carroll	Sept. 20-23
Cass	Atlantic	Sept. 5-8
Cedar	Tipton	Aug. 30-Sept. 2
Cedar	West Branch	Aug. 23-26
Cerro Gordo	Mason City	Sept. 27-29
Cherokee	Marcus	Sept. 20 23
Chickasaw	New Hampton	Sept. 7-9
Clarke	Osceola	Sept. 6-9
Clayton	National	Sept. 6-9
Clayton	Garnavillo	Sept. 6-9
Clinton	DeWitt	Sept. 13-16
Crawford	Denison	Sept. 15-17
Dallas	Adel	Sept. 20 23
Davis	Bloomfield	Sept. 20-23
Decatur	Leon	Sept. 19-23
Delaware	Manchester	Sept. 13-16
Des Moines	Burlington	Sept. 12-17
Fayette	West Union	Aug. 30-Sept. 2
Floyd	Charles City	Sept. 13-15
Franklin	Hampton	Sept. 13-16
Greene	Jefferson	Aug. 16-20
Grundy	Grundy Center	Sept. 13-16
Hamilton	Webster City	Sept. 13-16
Hancock	Britt	Sept. 20 22
Hardin	Eldora	Sept. 6-9
Harrison	Missouri Valley	Sept. 27 30
Howard	Cresco	Aug. 23 26
Humboldt	Humboldt	Sept. 27 30
Ida	Battle Creek	Sept. 13-15
Iowa	South Amana	Sept. 6-9
Jackson	Maquoketa	Sept. 20 23
Jasper	Newton	Sept. 20-23
Jefferson	Fairfield	Sept. 13-15
Johnson	Iowa City	Sept. 12-15
Jones	Monticello	Sept. 5-9
Keokuk	Sigourney	Sept. 6-9
Kossuth	Algona	Sept. 20-23
Lee	Donnellson	Sept. 6-9
Louisa	Wapello	Sept. 6-9
Lucas	Chariton	Sept. 6 9
Madison	Winterset	Oct. 3-6
Mahaska	Oskaloosa	Sept. 5 8
Marion	Knoxville	Sept. 20-23
Mills	Malvern	Sept. 20 23
Mitchell	Osage	Sept. 14-16
Montgomery	Red Oak	Sept. 12-16
Muscatine	Muscatine	Sept. 13-16
Osceola	Sibley	Sept. 22 23
Page	Clarinda	Aug. 29-Sept. 2
Palo Alto	Emmettsburg	Sept. 14-16
Pocahontas	Fondo	Sept. 13-16
Poweshiek	Malcolm	Aug. 23-26
Poweshiek	Grinnell	Sept. 5-8
Ringgold	Mount Ayr	Sept. 13-16
Sac	Sac City	Sept. 20-22
Scott	Davenport	Sept. 5-9
Shelby	Harlan	Aug. 23-26
Tama	Toledo	Sept. 27-30
Taylor	Bedford	Sept. 6-9
Union	Afton	Sept. 27-30
Van Buren	Keosauqua	Aug. 23-26
Wapello	Ottumwa	Aug. 15-19
Warren	Indianola	Sept. 13-16
Washington	Washington	Sept. 22-23
Wayne	Corydon	Sept. 12-16
Webster	Ft. Dodge	Oct. 4-7
Winnebago	Forest City	Sept. 13-17
Winneshiek	Decorah	Sept 6-9
Worth	Northwood	Sept 14-16
Wright	Clarion	Sept. 13-16

IOWA DISTRICT.

Appanoose	Moulton	Sept 27-30
Boone	Boone	Aug. 22-25
Carroll	Manning	Sept. 6-8
Cedar	Mechanicsville	Sept. 27-30
Clayton	Strawberry Point	Sept. 20-23
Dallas	Perry	Sept. 13-16
Fayette	Brush Creek	Sept. 6-8
Henry	Winfield	Aug. 30-Sept. 2
Iowa	Victor	Sept. 12-14
Jones	Anamosa	Aug. 30-Sept. 2
Keokuk	What Cheer	Sept. 27-30
Lee	Keokuk	Aug. 2-5
Lee	West Point	Sept. 27-30
Linn	Fairfax	Sept. 6-9
Linn	Central City	Sept. 13-16
Mahaska	New Sharon	Sept. 13-16
Marion	Pella	Sept. 27-29
Marion	Tracy	Sept. 13-15
Monona	Mapleton	Sept. 21-24
Muscatine	West Liberty	Sept. 6-9
Page	Shenandoah	Sept. 27-30
Poweshiek	Brooklyn	Sept. 14-16
Sac	Odebolt	Sept. 27-29
Shelby	Shelby	Sept. 27-30
Scott	Mt. Joy	Aug. 30-Sept. 2
Tama	Traer	Sept. 20-22
Taylor	Lenox	Sept. 27-Oct. 1
Union	Creston	Aug. 22-27
Van Buren	Milton	Sept. 13-16
Wapello	Agency	Sept. 30-30
Wapello	Eldon	Sept. 5-9
Wayne	Seymour	Sept. 26-30
Wright	Eagle Grove	Sept. 20-30

KANSAS.

Anderson	Garnett	Aug. 30-Sept. 2
Brown	Hiawatha	Sept. 7-9
Coffey	Burlington	Sept. 19-23
Cowley	Winfield	Aug. 30-Sept. 2
Crawford	Girard	Aug. 30-Sept. 2
Dickinson	Herington	Sept. 3-9
Ellis	Hays City	Sept. 22-24
Jefferson	Oskaloosa	Sept. 13-16
Linn	Mound City	Sept. 6-9
Marion	Peabody	Aug. 17-19
Miami	Paola	Oct. 4-7
Montgomery	Independence	Sept. 13-16
Nemaha	Sabetha	Sept. 27-30
Neosho	Erie	Oct. 4-7
Pottowatomie	Wamego	Sept. 20-23
Saline	Salina	Sept. 13-16
Sedgwick	Wichita	Sept. 26-Oct. 2
Wilson	Fredonia	Sept. 6-9

KENTUCKY.

Adair	Columbia	Aug. 9-12
Anderson	Lawrenceburg	Aug. 9-11
Barren	Glasgow	Sept. 27-30
Bath	Sharpsburg	Aug. 9-12
Boyle	Danville	Aug. 2-6
Caldwell	Princeton	Oct. 5-8
Campbell	Alexandria	Aug. 30-Sept. 3
Christian	Hopkinsville	Oct. 12-15
Clark	Winchester	Sept. 13-17
Daviess	Owensboro	Oct. 4-8
Fayette	Lexington	Aug. 30-Sept. 3
Hardin	Elizabethtown	Sept. 13-16
Harrison	Cynthiana	Sept. 21-24
Hart	Horse Cave	Sept. 20-23
Henderson	Henderson	Aug. 23-27
Henry	Eminence	July 19-23
Hopkins	Madisonville	Aug. 31-Sept. 3
Jefferson	Fern Creek	Aug. 16-18
Jessamine	Nicholasville	Aug. 16-20
Laurel	London	Aug. 24-26
Marion	Lebanon	Aug. 23-26
Mason	Germantown	Sept. 28-Oct. 1
Mason	Maysville	Aug. 23-27
Mercer	Harrodsburg	July 26-29
Montgomery	Mt. Sterling	Sept. 29-Oct. 1
Muhlenberg	Greenville	Oct. 12-15
Nelson	Bardstown	Sept. 6-10
Ohio	Hartford	Sept. 28-Oct. 1
Oldham	La Grange	Aug. 30-31
Owen	Owentown	Oct. 4-8
Shelby	Shelbyville	Aug. 23-27
Simpson	Franklin	Aug. 30-Sept. 3
Taylor	Campbellsville	Aug. 16-19
Union	Uniontown	Aug. 16-20
Warren	Bowling Green	Sept. 6

MAINE.

Aroostook	Houlton	Sept. 28-29
Oxford	Between villages of Norway and So. Paris	Sept. 13-15
Sagadahoe	Topsham	Oct. 11-13

MARYLAND.

Baltimore	Timonium	Aug. 30 Sept. 2
Cecil	Elkton	Sept. 6-9
Frederick	Frederick City	Oct. 11-14
Talbot	Easton	Sept. 13-16
Washington	Hagerstown	Oct. 11-14

MASSACHUSETTS.

Berkshire	Great Barrington	Sept. 28-30
Berkshire	North Adams	Sept. 20-22
Berkshire	Pittsfield	Sept. 13-16
Bristol	Taunton	Sept. 28-30
Essex	Lawrence	Sept. 27-28
Franklin	Charlemont	Sept. 15-16
Hampden	Palmer	Sept. 20-21
Hampshire	Northampton	Sept. 20-21
Middlesex	South Framingham	Sept. 13-14
Nantucket	Nantucket	Sept. 7-8

Plymouth	Bridgewater	Sept. 21-23
Plymouth	Hingham	Sept. 27-28
Worcester	Athol	Oct. 4-5
Worcester	Barre	Sept. 29-30
Worcester	Oxford	Sept. 20-21
Worcester	Sturbridge	Sept. 15-16
Worcester	Worcester Aug. 30-Sept. 2	

MICHIGAN.

Allegan	Allegan	Sept. 27-Oct. 1
Antrim	Bellaire	Sept. 27-29
Barry	Hastings	Sept. 27-30
Branch	Coldwater	Sept. 26-30
Calhoun	Marshall	Sept. 27-30
Charlevoix	East Jordan	Sept. 20-22
Genesee	Flint	Sept. 20-23
Hillsdale	Hillsdale	Oct. 3-7
Ingham	Stockbridge	Oct. 4-6
Isabella	Mt Pleasant	Sept. 27-30
Kalamazoo	Kalamazoo	Sept. 27-30
Kent	Cedar Springs	Sept. 13-16
Lapeer	Hadley	Oct. 4-6
Lapeer	Lapeer	Sept. 21-23
Lenawee	Adrian	Sept. 26-30
Livingston	Howell	Sept. 27-30
Macomb	Armada	Sept. 28-30
Mecosta	Big Rapids	Oct. 4-6
Midland	Midland	Sept. 21-23
Oakland	Pontiac	Sept. 27-30
Oceana	Hart	Sept. 27-30
Otsego	Gaylord	Sept. 23-25
St Joseph	Centreville	Oct 11-14
Tuscola	Caro	Sept. 27-30
Washtenaw	Ann Arbor	Sept. 27-30
Wayne	Plymouth	Sept. 27-30

MINNESOTA.

Fillmore	Preston	Sept. 13-16
Houston	Caledonia	Sept. 22-25
Jackson	Jackson	Sept. 29-30
Martin	Fairmont	Sept. 15-17
Mower	Aust n	Sept. 13-15
Ramsey	Hamline	Sept. 5-10
Todd	Long Prairie	Sept. 20-22
Wilkin	Breckenrid e	Sept. 26-28

MISSOURI.

Adair	Kirksville	Sept. 5-9
Andrain	Mexico	Aug. 1-6
Caldwell	Hamilton Aug. 30-Sept. 2	
Callaway	Fulton	Aug. 8-13
Cape Girardeau	Cape Girardeau Oct. 11-15	
Clark	Hahoka	Aug. 30-Sept. 2
Dade	Lockwood	Sept. 20-23
Gasconade	Hermann	Sept. 2-3
Greene	Springfield	Sept. 5-10
Grundy	Trenton	Sept. 13-16
Harrison	Ridgeway	Sept. 6-9
Jackson	Kansas City	Oct. 1-9
Johnson	Holden	Aug. 23-26
Lafayette	Higginsville	Aug. 24-27
Lincoln	Troy	Sept. 6-9
Livingston	Chillicothe	Sept. 26-30
Macon	LaPlata	Aug. 30-Sept. 2
Marion	Palmyra	Sept. 27-30
Maniteau	California	Sept. 20-23
Monroe	Paris	Sept. 13-17
Platte	Platte City Aug. 30-Sept. 3	
Polk	Bolivar	Aug. 31-Sept. 3
Randolph	Moberly	Aug. 9-13
St Charles	St Charles	Sept 14-15

MISSISSIPPI.

Grenada	Grenada	Oct. 26-28
Noxubee	Macon	Oct. 4-7

NEBRASKA.

Antelope	Neligh	Sept. 21-23
Butler	David City	Sept. 20-23
Brown	Long Pine	Sept. 16-19
Cheyenne	Sidney	Sept. 28 30
Clay	Clay Center	Sept. 13-16
Colfax	Schuyler	Sept. 14-16
Dawson	Lexington	Sept. 27-30
Dixon	Ponca	Sept. 13-16
Dodge	Fremont	Sept. 19-23
Fillmore	Geneva	Sept. 13-16
Hall	Grand Island	Sept. 27-30
Hamilton	Aurora	Sept. 13-16
Hitchcock	Culbertson	Sept. 27-30
Holt	O'Neill	Oct. 4-7
Johnson	Tecumseh	Sept. 28-30
Kearney	Minden	Sept. 13-16
Keith	Ogallala	Sept. 14-16
Lincoln	North Platte	Sept. 20-23
Nemaha	Auburn	Sept. 27-30
Otoe	Syracuse	Sept. 13-16
Perkins	Madrid	Sept. 21-23
Platte	Columbus	Sept. 28-30
Polk	Osceola	Aug. 30-Sept. 2
Sarpy	Papillion	Sept. 13-16
Seward	Seward	Sept. 27-30
Thayer	Hebron	Sept. 27-30
Valley	Ord	Sept. 20-23
Webster	Red Cloud	Oct. 4-7
York	York	Sept. 20-23

NEW HAMPSHIRE.

Belknap	Tilton	Sept. 13-15
Cheshire	Rindge	Sept. 28
Grafton	Canaan	Sept 20-22
Rockingham	South Hampton	Oct. 5-6
Strafford	Rochester	Sepr. 27-30

NEW JERSEY.

Atlantic	Egg Harbor City Sept. 24-26	
Burlington	Mt Holly	Sept. 12 16
Cumberland	Bridgeton	Aug. 23-25
Salem	Woodstown Aug. 30-Sept. 1	
Somerset	Somerville	Sept. 13-16

NEW YORK.

Albany	Albany	Sept. 19-24
Allegany	Angelica	Sept. 6-8
Allegany	Cuba	Sept. 19-23
Broome	Binghamton	Sept. 20-28
Broome	Whitney's Point Sept. 6-9	
Broome	Windsor	Sept. 13-16
Cattarangus	Little Valley	Sept. 5-8
Cayuga	Moravia	Sept. 20-23
Cayuga	Genoa	Sept. 6-9
Cayuga	Weedsport	Sept 29-30
Chautauqua	Jamestown	Sept. 20-23
Chemung	Elmira	Oct. 4-7
Chenango	Greene	Sept. 13-16
Chenango	Norwich	Sept. 13-16
Clinton	Plattsburgh	Sept. 13-16
Columbia	Chatham	Sept. 6-9
Columbia	Hudson	Aug. 30-Sept. 1
Delaware	Delhi	Sept. 20-22
Erie	Hamburgh	Sept. 20-23
Essex	Westport	Sept. 5-8
Franklin	Malone	Sept. 20-22
Fulton	Johnstown	Sept. 5-8
Genesee	Batavia	Sept. 19-22
Greene	Cairo	Aug. 30-Sept. 1
Herkimer	Herkimer	Sept. 27-29
Jefferson	Watertown	Sept. 20-23
Lewis	Lowville	Sept. 13-16
Livingston	Dansville	Sept. 6-9
Livingston	Hemlock Lake	Oct. 5-6
Livingston	Geneseo	Oct. 2-4
Madison	Brookfield	Sept. 20-22
Monroe	Rochester	Sept. 21-21
Monroe	Brockport Sept. 29-Oct. 1	
Montgomery	Fonda	Sept. 12-15
Niagara	Lockport	Sept. 15-17
Oneida	Rome	Sept. 19-23
Ontario	Canandaigua	Sept. 20-22
Orange	Warwick	Sept. 20-23
Orleans	Albion	Sept. 22-24
Oswego	Oswego	Aug. 30-Sept. 2
Otsego	Cooperstown	Sept. 19-21
Putnam	Carmel	Aug. 23-26
Queens	Mineola	Sept. 27-30
Rockland	Spring Valley Sept. 27-30	
St Lawrence	Canton	Sept. 13-16
Saratoga	Ballston	Sept. 6-9
Schoharie	Cobleskill	Sept. 26-29
Schoharie	Schoharie	Sept. 21-23
Schuyler	Watkins	Sept. 14-17
Seneca	Waterloo	Sept. 27-29
Steuben	Bath	Sept. 27-30
Steuben	Hornellsville	Aug. 22-26
Suffolk	Riverhead	Oct. 4-6
Sullivan	Monticello	Sept. 6-9
Tioga	Newark Valley Aug. 30-Sept. 2	
Tioga	Owego	Sept. 13-15
Tompkins	Ithaca	Sept. 13-16
Tompkins	Dryden	Sept. 27-29
Tompkins	Trumansburg	Sept 27-29
Ulster	Ellenville	Sept. 13-15
Warren	Glen Falls	Sept. 6-9
Washington	Fort Edward	Sept. 12-15
Washington	Cambridge	Sept. 6-9
Wayne	Lyons	Sept. 28-Oct. 1
Wayne	Newark	Sept. 14-17
Westchester	White Plains Sept. 26-Oct. 1	
Wyoming	Warsaw	Sept. 27-28
Yates	Penn Yan	Sept. 20-23

NORTH CAROLINA.

Rowan	Salisbury	Oct. 4-7

OHIO.

Adams	West Union	Sept. 13-16
Allen	Lima	Sept. 13-16
Ashland	Ashland	Aug. 30-Sept. 2
Ashtabula	Jefferson	Sept. 27-30
Athens	Athens	Sept. 20-22
Auglaize	Wapakoneta	Oct. 4-7
Auglaize	New Bremen Aug. 30-Sept. 2	
Champaign	Urbana	Aug. 23-26
Champaign	Mechanicsburg Aug. 16-19	
Carroll	Carrollton	Oct. 4-7
Clark	Springfield Aug. 30-Sept. 2	
Clermont	Boston	Aug. 29 Sept. 2
Clinton	Wilmington	Sept. 6-9
Columbiana	Salem	Oct. 4-7
Columbiana	Wellsville	Aug. 23-26
Coshocton	Coshocton	Oct. 11-14
Darke	Greenville	Sept. 5-9
Erie	Sandusky	Sept. 20-23
Fairfield	Lancaster	Oct. 11-14
Fulton	Ottokee	Sept. 20-23
Gallia	Gallipolis	Aug. 8-12
Guernsey	Washington	Sept. 27-30
Greene	Xenia	Aug. 16-19
Hancock	Findlay	Sept. 27-Oct. 1
Hardin	Ada	Aug. 30-Sept. 2
Hardin	Kenton	Sept. 6-9
Harrison	Cadiz	Aug. 30-Sept. 2
Henry	Napoleon	Sept. 6-9
Holmes	Millersburg	Sept. 27-30
Huron	Norwalk	Sept. 6-9
Jefferson	Smithfield	Sept. 28-30
Lake	Painesville Aug. 30-Sept. 2	
Licking	Newark	Oct. 4-7
Logan	Bellefontaine	Oct. 4-7
Lorain	Elyria	Sept. 27-30
Lucas	Toledo	Sept. 5-10
Madison	London	Sept. 6-9
Mahoning	Youngstown	Sept. 5-9
Mahoning	Canfield	Sept. 27-29
Marion	Marion	Oct. 4-7
Mercer	Celina	Aug. 23-26
Miami	Troy	Sept. 27-30
Monroe	Woodsfield Aug. 30-Sept. 1	
Montgomery	Dayton	Sept. 5-9
Morgan	McConnelsville	Sept. 6-8
Morrow	Mt. Gilead	Oct. 4-7
Muskingum	Zanesville Aug. 30-Sept. 2	
Noble	Caldwell	Sept. 20-22
Perry	Somerset	Sept. 29-30
Portage	Ravenna	Sept. 19-22
Preble	Eaton	Sept. 26-30
Putnam	Ottawa	Oct. 4-8
Richland	Mansfield	Sept. 27-30
Ross	Chillicothe	Aug. 9-12
Sandusky	Fremont	Sept. 27-30
Scioto	Portsmouth	Aug. 2-5
Seneca	Fostoria	Aug. 30-Sept. 2
Shelby	Sidney	Sept. 20-23
Stark	Canton	Sept. 26-30
Summit	Akron	Oct. 4-7
Trumbull	Warren	Sept. 13-16
Tuscarawas	Canal Dover	Sept. 20-23
Union	Marysville	Sept. 20-23
Van Wert	Van Wert Aug. 29-Sept. 2	
Warren	Lebanon	Aug. 30-Sept. 2
Wayne	Wooster	Oct. 4-6
Williams	Bryan	Aug. 30-Sept. 2
Wyandot	Upper Sandusky Sept. 27-30	

PENNSYLVANIA.

Allegheny	Tarentum Aug. 30-Sept. 2	
Armstrong	Dayton	Sept. 27-30
Beaver	Beaver	Sept. 27-30
Beaver	Hookstown	Aug. 17-19
Berks	Kutztown	Sept. 4-8
Berks	Reading	Sept. 6-9
Blair	Hollidaysburg Sept. 13-16	
Bradford	Towanda	Sept. 27-30
Butler	Butler	Sept. 6-9
cambria	Carrolltown	Sept. 27-30
Carbon	Leighton	Oct. 4-7
Centre	Centre	Sept. 12-17
Chester	Oxford	Sept. 28-30
Clarion	Clarion	Sept. 13-16
Chester	West Chester	Sept. 1-3
Columbia	Berwick	Sept. 7-10
Columbia	Bloomsburg	Oct. 12-15
Crawford	Titusville	Sept. 6-9
Cumberland	Carlisle	Sept. 27-30
Dauphin	Gratz	Sept. 23
Erie	Corry	Sept. 13-16
Indiana	Indiana	Oct. 3-7
Juniata	Port Royal	Sept. 21-23
Lackawanna	Scranton	Sept. 6-9
Lawrence	New Castle	Aug. 23-26
Lehigh	Allentown	Sept. 26-30
Luzerne	Dallas	Sept. 28-Oct. 1
Mercer	Mercer	Sept. 13-15
Mercer	Stoneboro	Sept. 27-30
Montour	Danville	Oct. 4-7
Northampton	Nazareth	Oct. 4-7
Northampton	Bethlehem	Sept. 20-24
Northumberland	Milton	Sept. 27-30
Northumberland	Shamokin	Sept. 20-23
Susquehanna	Harford	Sept. 20-22
Susquehanna	Montrose	Sept. 27-28
Warren	Warren	Sept. 13-16
Washington	Burgettstown	Oct. 4-6
Washington	Washington Aug. 29-Sept. 2	
Westmoreland	Greensburg Sept. 26-Oct. 1	
Wyoming	Tunkhannock Sept. 13-15	
York	Hanover	Sept. 13-16
York	York	Oct. 4-7

SOUTH CAROLINA.

Fairfield	Winnsboro	Oct. 27-28
Richland	Columbia	Nov. 15

SOUTH DAKOTA.

Deuel	Gary	Sept. 21-23
Minnehaha	Sioux Falls	Sept. 12-16
Clay	Vermillion	Sept. 25
Union	Elk Point	Sept. 28-Oct. 1

TENNESSEE.

Anderson	Clinton	Sept. 6-9
DeKalb	Alexandria	Sept. 22-24
Dyer	Dyersburg	Oct. 11-15
Fayette	Somerville	Sept. 28-30
Gibson	Trenton	Oct. 11
Giles	Pulaski	Sept. 27-30
Henry	Paris	Sept. 14-17
Lincoln	Fayetteville	Oct. 11-15
Madison	Jackson	Oct. 18-22
Marshall	Lewisburg	Oct. 4-8
Maury	Columbia	Sept. 20-24
Overton	Livingston	Oct. 6-8
Rutherford	Murfreesboro	Sept. 13-17
Shelby	Memphis	Oct. 8-15

TEXAS.

Brown	Brownwood Sept. 26-Oct. 1	
Comanche	Comanche	Sept. 20-24
Tom Green	San Angelo	Oct. 4-8

UTAH.

Juab	Nephi	Oct. 1

VERMONT.

Caledonia	St. Johnsbury Sept. 13-15	
Franklin	Sheldon Junction Sept. 7-9	
Washington	Waitsfield Aug. 31-Sept. 1	
Windham	Brattleboro	Sept. 28-29
Windsor	Woodstock	Sept. 27-29
Rutland	Rutland	Sept. 13-15
Rutland	Fair Haven	Sept. 27-30

VIRGINIA.

Augusta	Staunton	Aug. 23-26
Henrico	Richmond	Oct. 6-26
Loudoun	Leesburg	Aug. 23-25
Northampton	Cape Charles City Aug. 23-25	
Shenandoah	Woodstock	Oct. 4-7
Spotsylvania	Fredericksburg Aug. 30-Sept. 1	
Tazewell	Virginia	Sept. 20-23

WASHINGTON.

Walla Walla	Walla Walla Sept. 26-Oct. 1	

WEST VIRGINIA.

Greenbrier	Lewisburg Aug. 30-Sept. 2	
Harrison	Clarksburg Aug. 30-Sept. 1	
Jackson	Jackson C. H	Sept. 5-8
Mason	Point Pleasant Aug. 23-26	
Ohio	Wheeling	Sept. 5-9
Ritchie	Pennsboro	Sept. 13-15
Tyler	Middlebourne Aug. 23-25	
Wetzel	New Martinsville Aug. 30-Sept. 2	
Wood	Parkersburg Aug. 30-Sept. 2	

WISCONSIN.

Adams	Friendship	Sept. 21-23
Barron	Chetek	Sept. 20-22
Brown	Green Bay	Sept. 6-9
Calumet	Chilton	Sept. 20-23
Columbia	Portage	Sept. 6-9
Dane	Madison	Sept. 5-9
Dodge	Beaver Dam	Sept. 27-30
Door	Sturgeon Bay Sept. 28-Oct. 1	
Fon du Lac	Fon du Lac	Sept. 6-9
Grant	Bloomington	Sept. 7-9
Iowa	Dodgeville	Aug. 24-26
Jefferson	Jefferson	Sept. 27-30
Juneau	Mauston	Sept. 13-15
La Fayette	Darlington	Sept. 7-9
La Crosse	La Crosse Aug. 29-Sept. 3	
Manitowoc	Manitowoc	Sept. 6-9
Ontagamie	Hortonville	Sept. 7-9
Portage	Amherst	Sept. 20-22
Racine	Racine	Sept. 6-9
Rock	Jonesville	Sept. 6-9
Sheboygan	Sheboygan	Sept. 6-9
Walworth	Elkhorn	Sept. 20-23
Waukesha	Waukesha	Aug. 23-26
Winnebago	Oshkosh	Sept. 19-23

CANADA.

ONTARIO.

Frontenac	Kingston	Sept. 1-9
Norfolk	Simcoe	Oct. 17-19
Ontario	Whitby	Sept. 20-22
Perth	Stratford	Sept. 29-30
Peterborough (East)	Norwood	Oct. 11-12
Peterborough (Central)	Peterborough	Sept. 27-29
Renfrew	Renfrew	Sept. 20-21
Stormont	Cornwall	Sept. 16-17
South Grenville	Prescott	Sept. 20-22
Waterloo	Berlin	Sept. 27-28

QUEBEC.

Compton	Cookshire	Sept. 13-14
Huntingdon	Havelock	Sept 6

PRINCE EDWARD ISLAND.

Prince	Summerside	Sept. 21
Kings	Georgetown	Oct. 4-5

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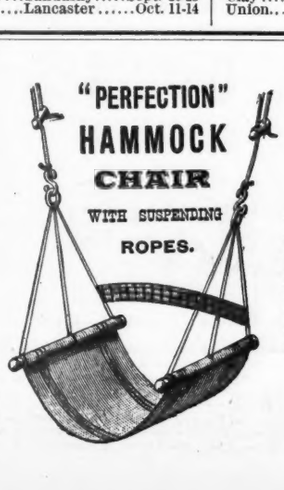

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The Abundance or Scarcity of Labor.

In the interest of farmers, Secretary Rusk has been investigating the labor question, the result being a valuable report, full of interest, from the Department of Agriculture. In New England there is a scarcity of farm labor, due to the preference for work in cities at higher wages and, possibly, with higher expenses, and to the lumbering and ship building interests, the result being that much dependence is placed upon foreign labor, which is lacking in intelligent efficacy. In New York, labor is not so scarce, especially in the northern and western counties, but nearer the cities intelligent labor is lacking. In New Jersey much of the labor is Italian, and most of it is procured from Castle Garden, while in Pennsylvania labor is absorbed by the railroads, mines, factories, lumber, milling and oil industries, causing a scarcity of good farm help in two-thirds of the State. In Delaware and Maryland the same causes exist, more or less, with fishing and canning industries to absorb the supply, while in Virginia and West Virginia the extension of public works and manufacturing improvements are drawing many laborers away from the farms. In the cotton region there has been but little change in the situation for several years, except along the lines of railroads, where factories and improvements demand a certain proportion of help. In Mississippi there is a movement to the river counties, but labor is generally abundant, though not always satisfactory, and the same may be said of Louisiana.

A decrease in stock raising and enlargement of cultivated area are causing a shortage in the labor supply of Texas, where many Swedes and Germans are also acquiring their own lands. In Arkansas, generally, there is ample labor, while it is in less demand in some parts of Tennessee, because more attention is paid to grain and grass, and less to cotton raising. In Kentucky, generally, the supply is good, but the quality not of the best, but in Ohio and Indiana, owing to the growth of towns and manufactures, the supply is short in about half of each State. Owing to heavy crops there has been a greater demand in Illinois, and many farm laborers have gone further West, or sought employment in connection with the Exposition at Chicago. Lumbering and mining pay better than farm wages in Michigan and Wisconsin, where there is a scarcity, which has also been experienced in Minnesota, Iowa, Missouri and Nebraska, owing, to a great extent, to the heavy crops of last year, and to the fact that the young men are still going further west. In the Dakotas, crop failures, the lack of steady work, and the taking up of land on their own account, resulted in a considerable shortage of help during the recent prolific season. Further west, the supply is generally ample or near at hand, except in a few counties on the Pacific coast. An interesting comparison of the rates of wages ruling in different sections of the country, at stated periods, is here given, both with and without board:

States.	1892. *With*	*without*	1885. *With*	*without*	1875. *With*	*without*	1866. *With*	*without*
Eastern .	$17.50	26.46	16.70	25.30	18.59	29.00	20.82	33.31
Middle ..	15.78	23.83	15.24	23.19	16.98	26.99	19.01	29.83
Southe'n	10.02	14.86	9.90	14.27	9.94	15.28	10.75	16.63
Western.	15.36	22.61	15.20	22.27	15.44	23.25	18.48	27.84
M't'n....	21.28	32.16	19.74	30.24	.....	.....	17.61	27.23
Pacific ..	24.25	36.15	24.37	37.78	28.13	43.50	29.48	44.60
Average.	12.54	18.60	12.34	18.06	12.72	19.49	17.45	26.87

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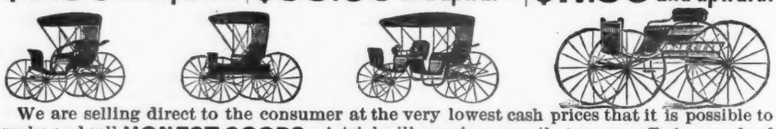

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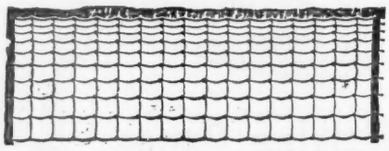

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THE CROPS OF THE UNITED STATES.

THE MIDSUMMER CONDITION AND THE ACREAGE OF THE STAPLE CROPS.

[Compiled by the AMERICAN AGRICULTURIST from the returns of the United States Department of Agriculture.]

The main facts about the crops of 1892 are given by States and for the country at large in the table below. The condition of each crop on the first of July is given on the basis of 100, representing a full stand in every respect. The acreage of each crop is also returned, 100 in this case representing the breadth devoted to the crop last year (1891). Just what this breadth was last year is fully stated in the AMERICAN AGRICULTURIST for January, 1892, our Anniversary Number. That number with the crop report data published in each issue since, the table in the AMERICAN AGRICULTURIST for October, 1891, similar to the one below, and the information presented herewith, give all the data for judging present crop prospects. Every subscriber can thus draw his own conclusions, and need not be unduly influenced by Produce Exchange reports that are notoriously manipulated in the interests of speculators rather than of producers and consumers. Such comprehensive method of presenting these data is unique in the AMERICAN AGRICULTURIST, and alone makes the magazine indispensable.

STATES AND TERRITORIES.	CORN.		WHEAT. Winter.		WHEAT. Spring.		RYE.		OATS.		BARLEY.		POTA'S Irish.		TOBACCO.		COTTON.		CLOVER.		TIMOTHY.	PASTURE.	APPLES.	GRAPES.	PEACHES.
	Condition.	*Acreage.*	*Condition.*	*Acreage.*	*Condition.*	*Acreage.*	*Condition.*	*Acreage.*	*Condition.*	*Acreage.*	*Condition.*	*Acreage.*	*Condition.*	*Acreage.*	*Condition.*	*Acreage.*	*Condition.*	*Acreage.*	*Condition.*	*Acreage.*	*Condition.*	*Condition.*	*Condition.*	*Condition.*	*Condition.*
Maine	97	101	....	....	100	100	99	100	99	103	99	102	97	96	....	....	....	....	94	100	96	101	94	95	....
New Hampshire	95	100	....	....	96	99	99	100	97	102	97	103	98	92	....	....	....	....	90	100	90	97	92	88	88
Vermont	93	99	....	....	98	99	98	99	96	103	97	102	94	90	....	....	....	....	100	101	100	100	93	95	....
Massachusetts	94	101	....	....	99	.....	93	99	97	100	93	100	99	99	95	119	....	....	98	100	98	99	92	96	90
Rhode Island	99	103	....	....	....	.....	98	100	99	104	99	100	99	100	....	....	....	....	100	100	98	100	90	91	90
Connecticut	96	100	95	100	....	.....	99	100	95	100	....	.....	98	95	99	110	....	....	94	99	97	97	85	95	90
New York	90	95	98	101	95	95	98	100	93	100	94	97	96	94	95	105	....	....	99	100	99	100	74	93	58
New Jersey	96	98	97	100	....	.....	98	100	87	97	....	.....	97	99	....	....	....	....	73	100	91	92	70	90	63
Pennsylvania	90	96	92	99	....	.....	93	98	87	95	85	97	93	97	90	97	....	....	90	99	95	95	70	90	65
Delaware	94	100	98	103	....	.....	96	100	95	99	....	.....	83	90	....	....	....	....	90	98	86	80	48	98	40
Maryland	94	98	92	99	....	.....	95	95	88	99	....	.....	92	95	95	98	....	....	85	99	87	88	52	85	49
Virginia	96	101	97	99	....	.....	96	98	94	101	92	.....	95	100	94	97	85	73	83	97	82	91	49	86	40
North Carolina	97	106	97	106	....	.....	96	100	97	105	....	.....	99	105	97	98	91	76	96	98	96	98	65	88	58
South Carolina	98	112	99	110	....	.....	94	101	96	110	....	.....	95	103	....	....	94	84	96	101	95	95	70	95	80
Georgia	95	110	99	107	....	.....	99	102	88	107	....	.....	93	101	....	....	88	84	90	100	95	92	75	96	85
Florida	96	108	....	....	....	.....	....	....	76	115	....	.....	88	110	90	130	86	81	....	....	....	88	92	97	88
Alabama	96	110	92	104	....	.....	97	101	92	105	....	.....	99	101	....	....	90	84	95	103	94	86	80	98	90
Mississippi	96	115	96	102	....	.....	98	....	99	112	....	.....	99	104	....	....	85	85	95	110	100	99	75	87	69
Louisiana	88	110	....	....	....	.....	....	....	99	118	....	.....	93	110	....	....	84	80	....	100	....	95	75	93	47
Texas	95	107	90	107	....	.....	90	102	98	110	95	101	97	100	....	....	87	85	....	100	....	93	75	83	65
Arkansas	82	108	94	103	....	.....	97	100	98	106	....	.....	98	102	87	101	77	82	99	108	100	100	70	80	60
Tennessee	92	102	96	98	....	.....	95	97	99	100	97	100	95	104	95	95	87	83	97	97	98	99	48	88	50
West Virginia	96	101	94	100	....	.....	98	98	98	93	95	.....	97	100	95	97	....	....	93	99	91	98	70	94	56
Kentucky	93	96	97	101	....	.....	95	96	94	102	95	97	96	93	93	98	....	....	99	99	100	100	43	90	61
Ohio	80	90	83	102	....	.....	88	99	86	95	91	98	86	93	95	99	....	....	92	93	94	99	65	79	40
Michigan	73	81	88	99	....	.....	94	99	83	87	80	90	80	90	....	....	....	....	95	97	100	100	48	96	70
Indiana	72	84	85	99	....	.....	87	97	84	86	90	94	80	86	72	70	....	....	95	95	96	100	51	90	59
Illinois	70	84	90	98	....	.....	87	95	80	91	86	96	82	88	88	98	....	....	97	97	98	99	80	83	50
Wisconsin	67	86	80	88	90	96	92	102	91	106	87	100	80	90	91	100	....	....	88	86	98	100	78	93	....
Minnesota	77	92	....	....	92	102	92	101	92	102	91	104	92	99	....	....	....	....	97	98	99	100	67	86	....
Iowa	75	87	84	100	88	96	90	98	88	95	90	98	86	90	....	....	....	....	100	102	100	100	55	87	....
Missouri	75	86	84	87	....	.....	....	86	78	85	80	112	81	87	80	91	....	....	94	100	91	94	56	84	44
Kansas	81	99	91	98	....	.....	....	100	87	106	92	110	82	98	....	....	....	....	94	102	95	96	60	85	25
Nebraska	84	97	94	121	82	107	96	108	75	107	83	102	85	99	....	....	....	....	99	101	96	98	....	85	....
South Dakota	75	85	....	..	95	118	96	101	95	113	98	105	99	106	....	....	....	....	100	104	100	100	....	....	....
North Dakota	77	82	....	....	90	85	93	119	92	105	90	116	91	92	....	....	....	....	....	....	99	100	....	....	....
Montana	94	100	....	....	99	105	99	113	95	107	99	105	98	98	....	....	....	....	98	107	99	100	....	....	....
Wyoming	....	....	....	....	97	100	....	....	109	....	99	.....	90	99	....	....	....	....	100	105	100	100	80	....	....
Colorado	90	103	92	100	97	112	95	115	92	115	92	105	90	95	....	....	....	....	97	120	96	100	93	85	50
New Mexico	88	95	....	....	96	101	....	....	84	102	97	103	90	100	....	....	....	....	100	108	100	85	50	88	83
Arizona	90	105	95	98	97	102	90	100	94	102	95	103	98	104	....	....	....	....	100	110	....	100	84	80	65
Utah	88	91	98	106	95	104	99	103	96	110	99	101	93	91	....	....	....	....	99	103	99	99	65	85	80
Nevada	90	90	93	90	94	100	....	....	90	100	91	100	92	102	....	....	....	....	95	98	95	99	90	70	58
Idaho	95	105	....	....	95	101	99	....	90	100	95	101	95	100	....	....	....	....	97	101	100	100	90	98	75
Washington	95	100	95	112	90	115	96	106	97	105	96	95	96	100	....	....	....	....	100	110	100	100	97	95	89
Oregon	92	94	99	100	91	99	....	102	90	103	92	100	95	96	....	....	....	....	99	105	98	100	75	85	80
California	95	104	95	107	....	.....	....	103	95	101	97	104	98	93	....	....	....	....	98	108	93	95	85	75	85
Average	81.1	95.6	89.6	99.9	90.9	100.3	92.7	99.2	87.2	99.1	92.0	102.3	90.0	94.2	92.7	97.3	86.9	83.5	95.5	99.1	96.8	98.4	72	89	66

A Serious Shortage in Corn.

The Area Under Corn is five per cent less than last year, but the reduction is not equally distributed. It has mainly been confined to the great corn-producing regions of the Ohio, Upper Mississippi, and Missouri valleys. In these districts the falling off is much heavier than above stated, Ohio having only 90 per cent. as much land in corn as last year, Indiana 84, Illinois 84, Iowa 87, Missouri 86, Kansas 99 and Nebraska 97. The average of these seven great corn surplus States is 89, a reduction of 11 per cent.

This decrease has been in a measure offset by an increased acreage in the South, where a portion of last year's cotton breadth has been given to corn. In the eleven cotton States the present corn acreage, compared with that of last year, is 107.5. This makes a large increase in the aggregate area of that section, but the yield per acre in the surplus States, where the area is reduced, was 32.8 bushels last year, against only 16.8 bushels per acre in the South where the acreage this year is increased.

The Condition of Corn was returned on July 1st at an average for the whole United States of 81.1. This is the lowest July average ever reported by the Department of Agriculture. As in the case of acreage, the figures are lowest in the States of large production. The poor condition is the result of excessive rainfall, which delayed planting, prevented proper cultivation, and resulted in floods and overflows over large areas of bottom lands. In the surplus States already referred to the average is only 76.0. For purpose of extended comparison, the present July returns of condition in the principal corn States, together with the returns for the same States in other recent years, are given:

States.	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892
Texas	96	89	103	82	90	95	98	90	95	95
Tenn'se	92	95	102	88	98	98	92	90	96	92
Kente'y.	91	90	103	92	95	97	90	87	95	93
Ohio	83	93	97	93	96	96	81	85	93	80
Indiana.	92	97	106	95	98	95	81	94	95	72
Illinois.	85	97	90	97	98	93	82	97	96	70
Iowa	80	102	92	99	99	89	95	95	94	75
Missouri	82	98	87	101	99	91	92	93	88	75
Kansas	98	94	83	102	100	99	97	93	82	81
Neb'ska	87	99	97	95	100	91	98	91	90	84
U. S.	88	96	94	95.2	97.7	93.0	90.3	93.1	92.8	81.1

Exports of Corn.—During the past year the Department of Agriculture has been represented in a number of European countries by a special agent charged with the duty of urging the use abroad of Indian corn as human food. A statement from German official sources shows the heavy increase in our shipments to that country as the result of this effort. The trade returns of the fiscal year just ended, also bear witness to the effective work, which has been done upon this line. During the twelve months ending June 30, 1892, we shipped 73,768,672 bushels of corn, valued at $40,623,517, against 30,768,213 bushels, valued at $17,652,687, during the preceding year.

A comparison of the trade of the past six months, however, will show more forcibly the results which have been accomplished. From January 1, to June 30, 1892, we sold 55,554,173 bushels, valued at $29,058,552, against 11,699,193 bushels, valued at $7,791,825, for the same period of the previous year. Heretofore when our shipments of corn abroad have been large it has been sold at a low price. Thus in 1890, the only year in which exports were as large as those of the past season, the average price was only 41.7, while the average price received for the shipments of 1892 was 55.1 cents per bushel.

Exports of corn meal for the year were 28,250 barrels, against 25,756 in the fiscal year ended June 30, 1891.

The Total Crop for 1892 depends so much on the weather in July and August, and the crop on July 1st was so backward that any estimate as to the final product is useless at this date. We grew 2,060 million bushels last year and 1,490 millions in 1890, an average for the two past years of 1,775 millions compared with 1,703 million bushels as the ten year average. If the '92 crop exceeds the latter quantity the season must be extraordinarily favorable and the fall very late.

The Wheat Prospect.

The Condition of all Wheat on July 1st is returned at an average of 90 against 95.5 at the same time last year. With a total acreage slightly less than last year (see Page 450 of our July number), and condition not materially improved during June, we see nothing to change the AMERICAN

AGRICULTURIST'S opinion that the indications point to a total crop of about 550,000,000 bushels. If anything, this is over, rather than under, July prospects. The 1892 crop was officially estimated at 612,000,000 bushels, but is generally believed to have been more; against 400,000,000 in 1890 and 505,521,000 as the average for the two past crops, and 450,000,000 as the ten years average.

Winter Wheat makes a July 1st average of 89.6, a gain of 1.3 points during June. This is much above its July condition in 1890, of 76.2, when the crop was so short, but is 6.6 points below the remarkably high condition one year ago. June was mainly favorable to the wheat crop. Condition is quite high in all sections where the crop is grown, except in Ohio, Michigan, Indiana, Wisconsin and Missouri, and, as given in the large table, may be compared with the June report (Page 450) and the first reports Page 576. October, 1891, and in our January issue.

Spring Wheat declined during the month from 92.3 on June 1st to 90.9 on July 1st. The average in July, 1891, was 94.1, and 94.4 in July, 1890.

The principal decline was in Wisconsin, on account of excessive rain; in Nebraska the result of hot, dry weather in June, following an unusually wet spring, and in Washington and Oregon, where it was injured by hot, dry weather during the closing days of the month.

The Export Movement of Wheat for the fiscal year ended June 30, 1891, reaches the grand total of 216,163,000 bushels, valued at $230,137,000. Flour was exported to the amount of 14,760,000 barrels at $4.88, equivalent to 64,360,000 bushels of wheat, and 152,803,000 bushels when shipped in the grain, at an average value of $1.06. The nearest approach to this enormous total was the 154 million bushels exported in the year ended 1887, valued at $142,666,000 or 89 cents per bushel, against 93 cents last year.

Other Cereals.

A Large Decrease in Oats is Certain. The low condition of oats reported in June, 88.5, has been further reduced during the month, and the present return, 87.2, is the lowest July condition ever reported with one exception. The averages are lowest in the States of large production, generally the result of an unfavorable season for seeding, and too much rain during the period of growth. With 2,500,000 acres less than last year, the crop must be between the 524 million bushels grown in 1890 and 738 millions last year, but probably exceeding the average of the past two years—631,000,000 bushels. Oats have also participated in the extraordinary foreign demand, exports (including meal at 17 pounds to the bushel of grain) having been 10,247,000 bushels valued at $4,234,000, or 41 cents per bushel, or several times as much as the previous year, when the export price averaged 45 cents.

An Average Rye Crop is being harvested. The acreage is about as last year and condition very nearly the same. The country is very bare of rye, and prices must rule fair for the new crop. We exported 11,827,000 bushels of rye in the fiscal year just ended, valued at $11,264,000, or 95 cents per bushel, against only 333,000 bushels shipped abroad the previous year at 63 cents.

Barley Will be a Large Crop, as condition averages 92 against 90.9, 88.3 and 91.9 during the three preceding years on a considerably increased area. Barley exports were 2,800,000 bushels, value $1,751,000, against 966,000 bushels in the fiscal year 1891.

Cotton in a Strong Position.

Cotton Exports for the ten months ending June 30th, of the present crop year, show an increase of only 20,000 bales or 2,000,000 lbs. as compared with the corresponding period of last season, but a decrease in value of $33,500,000. The figures are as follows:

10 mos. ending	Bales.	Pounds.	Value.
June 30, 1891,	5,687,522	2,842,319,359	283,566,813
June 30, 1892,	5,707,806	2,844,404,178	250,035,398

The Crop Improved its Condition just one per cent. during June, standing at 86.9 on July 1st. Last year the average improvement was three points. The plant is late, the stand somewhat imperfect, and cultivation not up to the usual standard. Improvement was manifested during June in the Atlantic and in the Western Gulf States, but there was a further decline in the Eastern Gulf States. Planters should note again the AMERICAN AGRICULTURIST'S statement of the 1892 acreage, on Page 448 of our July issue, and the details of previous crops given in our January issue, and judge for themselves the brighter prospects for prices. Compare also July 1st condition as follows:

States.	1892.	1891.	1890.	1889.	1888.
Virginia	85	82	92	83	81
North Carolina	91	77	95	85	85
South Carolina	94	80	95	84	86
Georgia	88	85	95	86	90
Florida	86	94	91	90	90
Alabama	90	87	95	87	92
Mississippi	85	91	89	91	92
Louisiana	84	90	86	92	91
Texas	87	95	89	90	76
Arkansas	77	93	89	83	90
Tennessee	87	82	93	82	90
Average	86.9	88.6	91.4	87.6	86.7

Two Great Money Crops.

Tobacco.—The aggregate acreage of tobacco is smaller than last year, the returns showing 97.3 per cent. of that area. The falling off is entirely in the shipping districts, the seed-leaf districts showing an increased acreage except in Wisconsin and Pennsylvania, which have about the same acreage as last year. The average condition of the crop is reported at 92.7, a figure somewhat better than the July return of recent years. The Department underestimates the increased breadth of tobacco in the Connecticut Valley district, where the '91 crop sold at 20 to 30 cents per pound and contracts for '92 leaf have already been made at 25 to 30 cents—three times the values current previous to last year.

Potatoes.—The acreage is returned at 94.2 per cent. of the large area of last year. In the South, where the breadth of cotton has been shortened, a considerable increase in the area devoted to this crop has been made; but in the New England and Western States, where the largest yield is obtained and the bulk of the crop is grown, there is a considerable decrease. The condition of this crop is almost invariably high in July, as the vicissitudes incident to its growth are met with later. The present return, 90.0, however, is low. This poor condition is the result of too much rainfall in the districts where the great portion of the crop is grown. With a July condition last year of 95.3 on an area 2.3 per cent. greater than the previous year and an October condition of 91.3, the crop was some 230,000,000 bushels, or 94 bushels per acre. In 1890, July condition was the lowest ever reported 91.7, which fell to 61.7 in October, making a crop of only 57.5 bushels per acre, or about 135,000,000 bushels. The average crop for the previous five years had been about 175,000,000 bushels. If nothing unusual intervenes the outlook for 1892 is for a crop between this average and the great yield of last year.

Imports of Potatoes show a very material falling off during the fiscal year just ended, as will be seen from the figures below. Canada, Great Britain, British West Indies, Germany and Cuba used to supply us largely, in the order named, and these importations continued, after the duty was advanced to 25 cents per bushel, owing to our short crop in 1890. But, for the year just ended, they have dwindled down to almost nothing. Imports, for the periods named, were:

Year ending	*Bushels.*	*Value.*	*Duty.*
June 30, '90,	3,415,920	$1,365,910	$512,388*a*
" " '91,	137,793	55,789	20,669*a*
" " '91,	5,225,914	2,742,256	1,306,479*b*
May 31, '92*c*,	180,512	183,029	45,757

a Duty 15 cents per bushel, *b* duty 25 cents per bushel, *c* 11 months.

Market Notes.

High Prices for Dried Fruit.—The market is in a very bare condition. There has been an excellent demand for the last pack, and a larger quantity than usual has been shipped abroad. From California, word comes that there are not ten cars of dried fruit left in the State, and growers are in good spirits over the outlook for the new pack. The more dried fruit is pushed into consumption, both at home and abroad, the greater will be the demand another season, because it is pure, of excellent quality, and fully retains its flavor. With any surplus of fresh fruits this season, it would not be amiss for growers to put up some dried fruit for market, but the work must be carefully, cleanly, and well done, and the fruit shipped, later on, in neat and attractive packages. This will pay better than allowing the fruit to waste.

American Fruit in India.—No trade has yet been established with India for fresh fruits, yet it is a fact that a considerable quantity of our canned fruit finds its way to that market. Shipments are not made direct, but through the English houses that handle our goods, thus increasing the cost to the consumer. Doubtless the time will come, in the natural expansion of our trade, when we shall be able to make direct shipments in this connection. The market is certainly there, both a large and a wealthy market, and, if we can decrease the cost of our canned fruits by shipping direct, there should be a very largely increased trade. In tropical India the luscious American fruits are highly relished and appreciated, and we must look to it to further develop this inviting and new field.

The Cuban Market Ours.—The statement has again appeared in the daily press to the effect that Spain had just concluded negotiations with Great Britain, whereby British produce and manufactures were to be, hereafter, admitted into the Spanish West Indies on the same terms as were secured for the United States by our reciprocity treaty. The Department of State answers the AMERICAN AGRICULTURIST'S inquiries by the Secretary, Hon. John W. Foster, as follows: "In May last, the negotiations then in progress between the two countries, terminated without any action. The Department is not in possession of the exact duties imposed by Spain, only the general fact that no reciprocity arrangement concedes the exemptions of tariff to any other nation, such as are extended to the United States." This does not look as if United States produce would have to meet the competition of Canadian produce in the Cuban market for the present.

Our Food Exports are phenomenal. Breadstuffs exports amounted to the enormous total of $289,000,000 for the fiscal year ended June 30, 1892, compared with $123,000,000 for the previous year. During the six months ended June 30, '92, breadstuffs exports were $133,000,000 against $68,350,000 in the corresponding period a year ago. The details of this immense gain appear in our summary of the various food staples. Cattle are being shipped far more liberally than last year, and the value of beef and hog exports for June was $10,520,000 against $6,950,000 in June last year. Beef and hog exports for eight months to July 1st were $85,000,000, or some seven million dollars increase over the like period of last year. Dairy produce is also meeting a more active foreign demand. May and June butter exports were 2,300,000 pounds, and cheese 13,797,000 pounds, a gain over the same time last year of about 20 and 30 per cent. in quantity. The export price of butter was 15.5 cents against 15.8 cents in May and June last year, and cheese 9.6 cents compared with 9.4 cents.

The Production of Hemp.—Outside of the State of Kentucky, hemp is but little cultivated in the United States. Not only is this industry centralized in one State, but also in ten counties of that State, four counties producing 59 per cent. of the total crop of the country, while six more produce 32 per cent., out of the total of 94 per cent. grown in Kentucky. The total area planted to hemp in 1889 was 25,054 acres, yielding 11,511 tons of fiber, valued at $1,100,602 to the producers. In 1879 the yield was 5,025 tons, in '69 was 12,746 tons, and 74,493 tons in '59, showing that the yield in '89 was less than 20 years previously, and only slightly more than one-seventh of the product of 30 years ago. This decline is attributed to foreign competition and to the lack of improved machinery for properly breaking and cleaning the fiber. The average yield of hemp per acre was 1,029 pounds, and the average value $96 per ton to the producer, or $44 per acre. There were 1,374 hemp growers in the census year, with an average of 18 acres, and an average product of 8.38 tons, worth $802 to the producer.

The Fruit Crop—Upward of 5000 reports from the fruit-growing regions of United States and Canada appeared in the NEW ENGLAND HOMESTEAD for July 14th. The general outlook was not promising either for large or small fruits, due to the effects of late frosts in the South, cold and wet weather during blossoming in the central and northern fruit belts, drouth in the Delaware peninsula, the prolific yield of last year and the increase in ravages caused by blight and insects. Blackberries are the best crop of small fruits, huckleberries are good only in Cape Cod, in New Jersey and Pennsylvania, currants are only fair, while red rasperries, blackcaps and gooseberries are three-fourths of a crop. Peaches are 40 per cent of a crop in New York and the Delaware

peninsula, good in Georgia, poor in North Carolina. Michigan reports average 75 per cent, Ontario orchards are comparatively bare, but California has a full peach crop, California also has a full yield of oranges, lemons, olives and limes; nectarines 90 per cent. figs 75, pomegranates 75, Japanese persimmons 50, prunes 70, almonds 86, guavas 60 and English walnuts 90. Cherries, apricots, plums and pears are generally reported as half a crop, quinces about 65 per cent, grapes range from 80 to 95, being poorest in Ohio, melons are a full crop in the South, while cranberries promise only a fair yield. In Florida the condition of pineapples is 100, oranges and lemons 33, figs, nectarines, olives each 50, pomegranates 100, Japanese persimmons 25.

The Apple Crop appears to be only half as good as a year ago when the yield was most prolific. Nova Scotia and Maine have the best outlook, New England poorer while New York and Ontario have only about 33 per cent of a crop. From Ohio, Michigan, Missouri, Kansas and Arkansas reports are exceedingly unfavorable for apples; the central and inter-mountain States are also short, while California has a fairly good average crop. Apples should sell well and find a ready matket, both for home use and for export, as the European crop is not likely to be a full one, according to THE HOMESTEAD reports.

Tobacco Analyses.—E. S. Mather, Amelia Co., Va.: Tobacco grown in Virginia has been analyzed by R. J. Davidson of your experiment station, who states (B. 14) that 1,000 pounds of leaf tobacco, together with the 218 pounds of stalks on which it grew, remove from the soil 58.90 pounds of nitrogen, 7.72 pounds of phosphoric acid, 77.86 pounds of potash, 63.46 pounds of lime and 12.00 pounds of magnesia. One-fourth of the nitiogen, one-third of the phosphoric acid and one-fourth of the potash are removed by the stalks.

More Than Raising Potatoes and Cabbages.—I would miss the face of a dear friend if the visits of the AMERICAN AGRICULTURIST were to stop. There is in its pages a good deal more than how to raise potatoes and cabbages.

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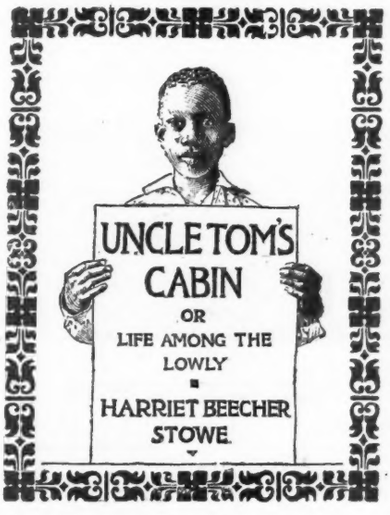

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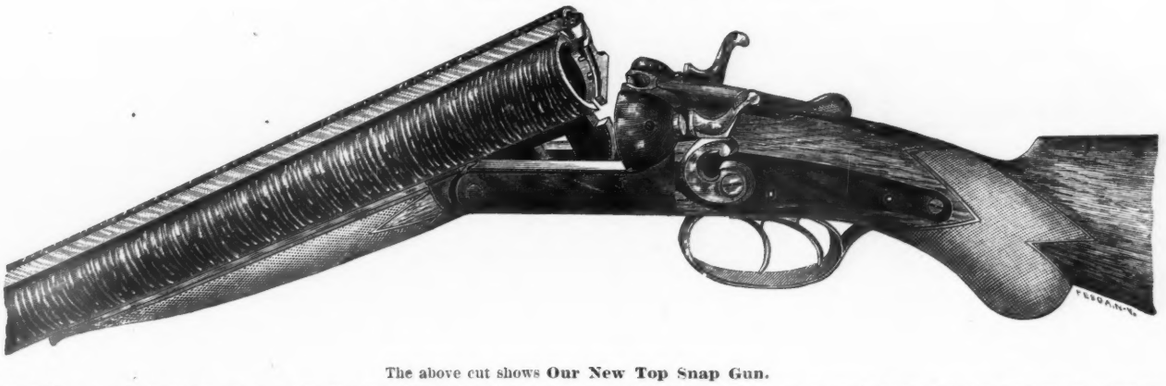

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